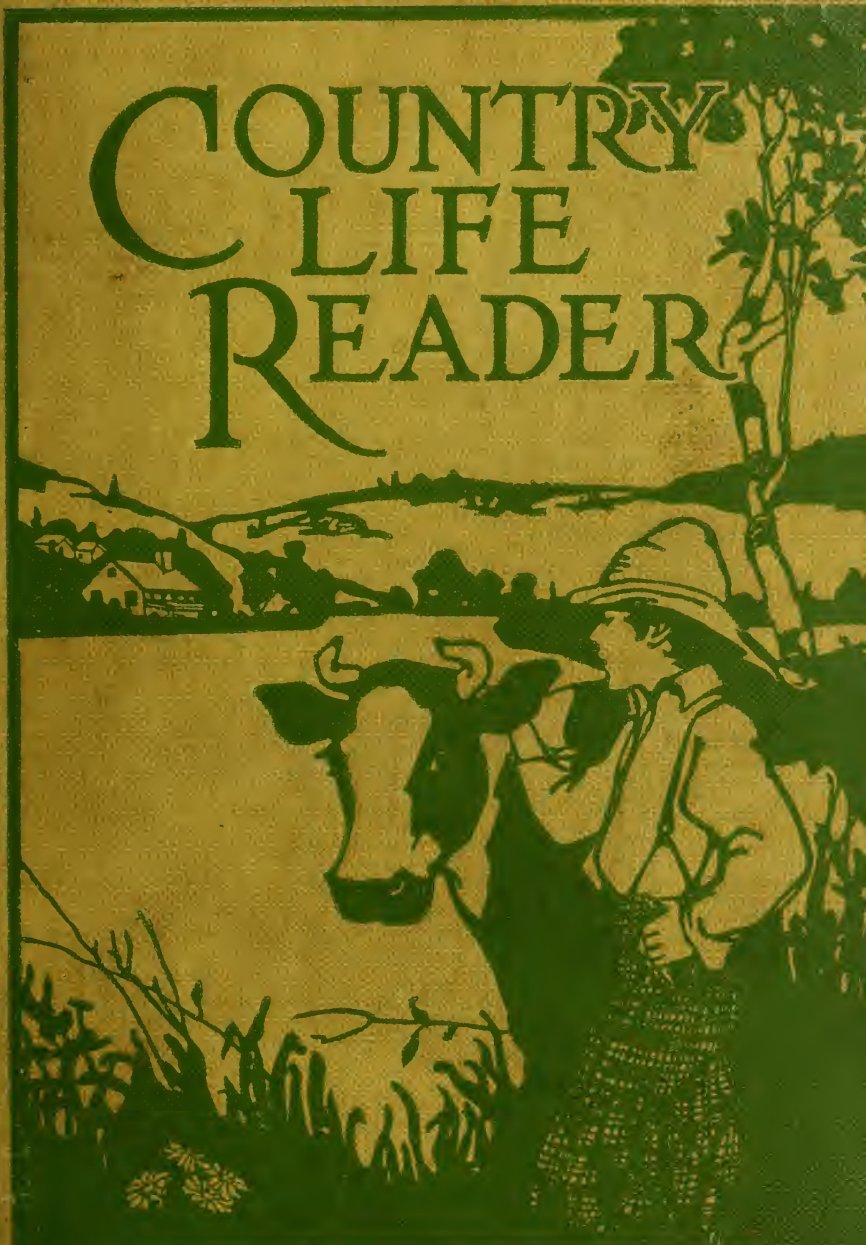
COUNTRY LIFE READER



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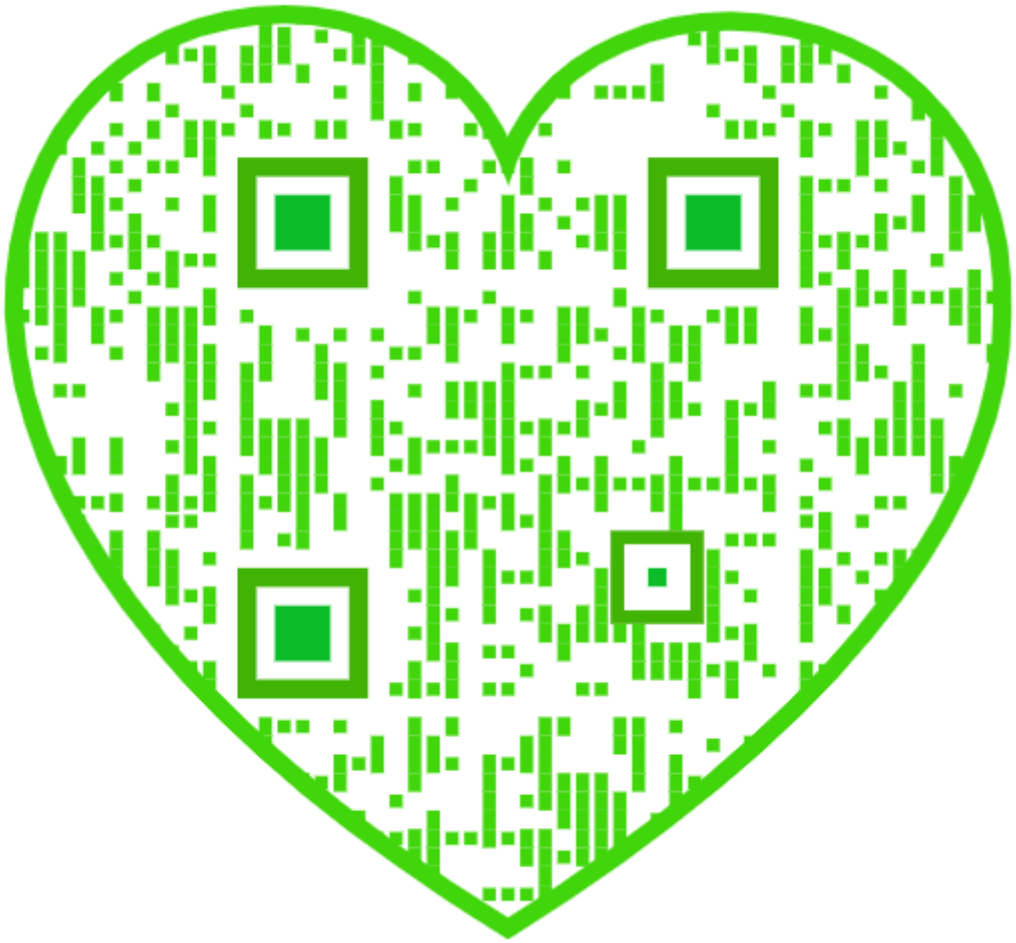

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COUNTRY LIFE READER

Helping Grandfather

COUNTRY LIFE READER

BY

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ASSISTANT MASTER, NORMAL SCHOOL, TORONTO

ILLUSTRATED

CHARLES SCRIBNER'S SONS

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PREFACE

One of the questions to which educationists of the present day are giving much attention is the problem of how to make farm life attractive to boys and girls. To succeed in doing this it is necessary not only to create an interest in the work of the farm itself, but also to lead young people to see the value of training and preparation for farming as a profession. In the selection of material for a Country Life Reader the editor has tried to keep in view both these needs. One of the first steps toward creating an interest in farm life is the teaching of elementary agriculture. But the science of agriculture is an abstract study requiring a greater maturity of mind than most children in the elementary schools possess; and, manifestly, if it is to be taught at all, it must be presented in simple form. Accordingly, in this Reader the editor has attempted to deal only with elementary principles of agriculture; and, wherever possible, these principles have been embodied in the form of a story. And furthermore, as this is a Reader, and not a scientific textbook in agriculture, no attempt has been made to give detailed information on any subject. The object of the lessons contained in the Reader is to stimulate the interest of the pupil so that he may be led to observe and study for himself.

In addition to the treatment of purely agricultural subjects, passages have been included in the Reader which are intended to direct the attention of the pupil to objects of interest and sources of pleasure in country life, and to lead him to appreciate the dignity of labor on the farm.

Thanks are due to both authors and publishers for permission to use the following selections:

"A Bird's Elegy" by Frank Dempster Sherman, "Farmer John" and "An Evening on the Farm" by John T. Trowbridge, "The Song of Milo, the Farm-Hand" by E. C. Stedman, "A Midsummer Song" by Richard Watson Gilder, The Houghton Mifflin Company; "The Farmer and the Millionaire" from "Adventures in Contentment" and "Paying My Way" from "The Friendly Road" by David Grayson, and "Clean Home Milk" from "Outdoor Work" by Mary Rogers Miller, Messrs. Doubleday, Page & Company; "The Planting of the Apple Tree" and "The Prairies" by William Cullen Bryant and "What Do We Plant When We Plant the Tree?" by Henry Abbey, Messrs. D. Appleton & Company; "The Scythe Song" by Andrew Lang, Messrs. Longmans, Green & Company; "The Country Faith" by Norman Gale, Messrs. Duffield & Company; "Planting Time" by L. H. Bailey, The Outlook Company; "The Poor Man's Farm" by David Buffum, *The Atlantic Monthly;* "The Legend of the Dandelion" from "For the Children's Hour" by Carolyn S. Bailey, The Milton Bradley Company; "The Redwing" by Bliss Carman, Messrs. L. C. Page & Company; "Maple-Sugaring" by E. P. Powell and "A Day on the

Farm" by Urban Lavery, *The Independent;* "The Apple Harvest" and "In the Plum Yard" by E. P. Powell, Outing Publishing Company; "A Flower Lover's Creed" by Walter A. Dyer and "The Country Boy" by Vivian Burnett, *The Craftsman;* "Indian Summer" by Wilfred Campbell, William Briggs; "A Visit to the Farm" from "Glengarry School Days" and "The Turnip-Hoeing Match" from "Corporal Cameron" by Ralph Connor, the Westminster Publishing Company; "The Boy Who Made the Reaper" by John Y. Beaty, *Farm and Fireside;* "Apple Time" by Arthur S. Phelps; "Wheat, Flour, and Bread" by R. Harcourt, The Ontario Department of Agriculture; "The Country Boy's Possessions" from "The Hoosier Folk-Child" by James Whitcomb Riley, The Bobbs-Merrill Company; "In Pioneer Days" by Canniff Haight, The Hunter, Rose Company; "The Country Boy's Creed" by Edwin Osgood Grover; "Harvest Time" by E. Pauline Johnson, The Musson Book Company; "Getting in the Hay" by Carl Werner, *Everybody's Magazine;* "A Colony of Honey-Bees" by E. R. Root, The University of Ohio Agricultural College.

"Morning in the Northwest" by Arthur Stringer and "September" by Helen Hunt Jackson are published by special arrangement with Messrs. Little, Brown & Company.

The author also wishes to thank the Westminster Publishing Company for permission to reprint the following articles of his: "A Raccoon Hunt," "Bubo Virginianus—the Story of a Great Horned Owl" and "Tommy, the Story of a Woodchuck"; and also the Presbyterian Pub-

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Thanks are also due to Mr. R. S. Cassels, Toronto, for some of the photographs of wild flowers which appear in the Reader, to the Eastman Kodak Company for the photographs which appear on pages 310 and 413, and to the *Ladies' Home Journal* for the illustrations which appear on pages 310–314.

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COUNTRY LIFE READER

PART I

AUTUMN

THE COUNTRY BOY'S POSSESSIONS

He owns the bird-songs of the hills,—
The laughter of the April rills;
And his are all the diamonds set
In Morning's dewy coronet,—
And his the Dusk's first minted stars
That twinkle through the pasture-bars,
And litter all the skies at night
With glittering scraps of silver light;—
The rainbow's bar, from rim to rim,
In beaten gold, belongs to him.

JAMES WHITCOMB RILEY.

THE WONDERFUL WORLD

Great, wide, beautiful, wonderful World,
With the wonderful water round you curled,
And the wonderful grass upon your breast—
World, you are beautifully drest.

The wonderful air is over me,
And the wonderful wind is shaking the tree;
It walks on the water, and whirls the mills,
And talks to itself on the top of the hills.

You, friendly Earth! how far do you go,
With the wheat-fields that nod and the rivers that
flow,
With cities and gardens, and cliffs and isles,
And people upon you for thousands of miles?

Ah, you are so great, and I am so small,
I tremble to think of you, World, at all;
And yet, when I said my prayers to-day,
A whisper within me seemed to say—
"You are more than the Earth, though you are such
a dot;
You can love and think, and the Earth can not!"

W. B. Rands.

There was nothing on it but a small log house.

GRANDFATHER'S FARM

When grandfather was alive he was very proud of his farm. When he first bought the place there was nothing on it but a small log house and a tumble-down barn. The fields were divided off by stone walls or by "snake" fences. The land was not drained, and the whole place was overrun with weeds. But grandfather was a young man then, and was not afraid of hard work. The farm was cheap, and he knew that if he were to set to work to make it over, it would increase very much in value and would more than repay him for his labor.

Grandfather did not believe much in luck, and he knew that hard work in itself would not accomplish much unless it was properly planned. Indeed, one of the chief

reasons why he got along so well was that before undertaking anything new he always carefully counted the cost.

In those days farmers had to endure many more hardships than they do now, and grandfather and grandmother certainly had their own share. They could not think of a new barn until they had better crops to pay for it, and a new house was less important than a new barn.

The first thing to consider was how to improve the crops, and that meant at least three things. First of all, the soil had to be enriched, then it had to be drained, and at the same time it had to be cleared of weeds. All these things took time and labor and a great deal of patience. Then, when the soil itself was getting into better shape, grandfather began to make other improvements. His farm contained one hundred acres, and at first he could not afford to keep a hired man. But there are many things that one man working alone cannot do, and grandfather decided that it would pay him better to have a little more land and keep a hired man to help. It happened that the fifty-acre farm across the road from his own was for sale, and he decided to buy it.

Now that he had a larger farm and a man to help him, he was able to plan his work better, and he began to make some important changes in the lay-out of the farm. Among the first things that he had to consider were the size and shape of the different fields and the improvements in the fences. Instead of having ten or twelve fields of different sizes and shapes, he made up his mind to divide the farm up into six divisions of about twenty acres each, reserving twenty-five acres for woods and pasture, and five for the

house, barn, orchard, garden, and lanes. He had made up his mind to replace the old stone and stump fences with neat wire fencing, and he knew that, the larger the fields, the less the fencing would cost. The shape of the fields was not quite so easy to decide, for several things had to be considered—the nearness to the barn, the kind of soil, and the number of turns required in going up and down the field. He had decided to build his new house and barn next to the main road in the centre of his farm, and he found now that if he made his fields oblong—about twice as long as wide, he could reach them easily from the barn, and besides they could be worked with less labor than fields that were more nearly square.

It was a good deal of work to take out the stump and stone fences, but the farm was improved in every way by the change, and out of these stone fences he obtained more than enough stone for the foundation of the barn.

I shall not attempt to describe the new stable barn. It was not possible in those days to have cement floors, water-pipes, etc., but grandfather knew at least that the stables should be roomy and provided with plenty of light and air, and should be kept very clean; and he made the best provision possible for these things.

The house, when it was built, was not pretentious, but it was substantial and comfortable. It had a good kitchen and living-room, a fine cellar and storeroom, and clean, airy bed-rooms; and it had a good orchard and garden behind it, and a pretty bit of lawn in front.

My brother Jim works the farm now, and of course a good many changes have taken place since grandfather's time. Jim and his wife do not have to work so hard, and

they have a much easier life in every way than grandfather and grandmother—but I am not sure, after all, that they really enjoy life much better than grandfather and grandmother did when they lived in the little log house and planned the farm.

If you have no money at all you must fight it out somehow, whether in country or in town. But if you have a little—just a very little—you can make it amount to something in the country. . . . And I for one prefer the farm. To stand on your own hilltop, looking across your own orchard and meadow, with your own grain greening in the July sun, with your own cattle standing knee-deep in your own brook—that is the simple life that satisfies. . . . And when winter comes and the stubble-fields lie sleeping beneath their white mantle there is time for books and talk and dear old friends. . . . Time and room to think, to enjoy, to live. Don't you hunger and thirst for it?

Walter A. Dyer.

FARMER JOHN

Home from his journey, Farmer John
  Arrived this morning, safe and sound.
His black coat off, and his old clothes on,
"Now I'm myself!" says Farmer John;
  And he thinks: "I'll look around."
Up leaps the dog: "Get down, you pup!
Are you so glad you would eat me up?"
The old cow lows at the gate to greet him;
The horses prick up their ears to meet him:
    "Well, well, old Bay!
    Ha, ha, old Gray!
Do you get good feed when I am away?

"You haven't a rib!" says Farmer John;
  "The cattle are looking round and sleek;
The colt is going to be a roan,
And a beauty too: how he has grown!
  We'll wean the calf next week."
Says Farmer John: "When I've been off,
To call you again about the trough,
And watch you, and pet you, while you drink,
Is a greater comfort than you can think!"
    And he pats old Bay,
    And he slaps old Gray;
"Ah, this is the comfort of going away!"

"For, after all," says Farmer John,
"The best of a journey is getting home.
I've seen great sights; but would I give
This spot, and the peaceful life I live,
For all their Paris and Rome?
These hills for the city's stifled air,
And big hotels all bustle and glare,
Land all houses, and roads all stones,
That deafen your ears and batter your bones?
Would you, old Bay?
Would you, old Gray?
That's what one gets by going away!

"There Money is king," says Farmer John;
"And Fashion is queen; and it's mighty queer
To see how sometimes, while the man
Is raking and scraping all he can,
The wife spends, every year,
Enough, you would think, for a score of wives,
To keep them in luxury all their lives!
The town is a perfect Babylon
To a quiet chap," says Farmer John.
"You see, old Bay—
You see, old Gray—
I'm wiser than when I went away.

"I've found out this," says Farmer John,
"That happiness is not bought and sold,
And clutched in a life of waste and hurry,
In nights of pleasure and days of worry;
And wealth isn't all in gold,

Mortgage and stocks and ten per cent.—
But in simple ways and sweet content,
Few wants, pure hopes, and noble ends,
Some land to till, and a few good friends,
Like you, old Bay,
And you, old Gray!
That's what I've learned by going away."

And a happy man is Farmer John—
O, a rich and happy man is he!
He sees the peas and pumpkins growing,
The corn in tassel, the buckwheat blowing,
And fruit on vine and tree;
The large, kind oxen look their thanks
As he rubs their foreheads and strokes their flanks;
The doves light round him, and strut and coo.
Says Farmer John: "I'll take you too—
And you, old Bay,
And you, old Gray,
Next time I travel so far away!"

JOHN T. TROWBRIDGE.

THE SMALLEST PLANTS ON THE FARM

"What do you suppose I have in this pail?" asked Clark, as he came up the garden walk with a small pail and a child's spade in his hand.

"I don't know," said Ruth. "Isn't it just earth?"

"Just earth! Pooh! Maybe you won't believe me. I've a hundred million plants in this pail."

"A hundred million plants!" and Ruth laughed loudly in derision. "Who's been filling your head with that nonsense?"

"It's no nonsense, I tell you," replied Clark. "Father told me, and he knows."

"Let me see them," asked Ruth, peering into the pail with just a touch of curiosity. "There! Didn't I tell you? It's just plain, ordinary earth!"

"Listen," said Clark, "and I'll tell you what father says. He says that all this earth on our farm, if it's any good for growing things, is just packed full of the tiniest little plants, so small that you can't see them unless you look through a kind of glass that makes things look bigger!"

"Oh," interrupted Ruth, "isn't that dreadful! It's no wonder that weeds grow so fast, is it?"

"No," continued Clark; "they're not that kind of plants at all. Father called them *bacteria*, and he says they're the best kind of plants on the farm—some of them are, anyway. Do you know what they do? When father ploughs up the ground and covers up the dead leaves

and grass and all the other dead things, there are millions and millions of bacteria there to feed on them, and that's what makes them rot and makes the earth rich. And there's another kind of bacteria that helps, too, in a different way. Just wait till I show you!"

Root showing nodules.

Just across the lane was a clover-field, and in a moment Clark was back with a clover plant, root and all, in his hand.

"See here," he continued. "Do you see those little bags that are hanging to the roots? Father says they're full of a thing called *nitrogen* that helps the clover to grow."

"Isn't that curious!" exclaimed Ruth, unable any longer to restrain her show of interest. "How do the little bags get there?"

"I was just going to tell you," continued Clark. "It's the bacteria that makes them grow. You see, it's this way. The bacteria make their way into the roots, and father says they start up little nitrogen factories there. When they begin to gather nitrogen the roots swell up into these little balloons and the clover gets all the nitrogen it needs. Father says that if the ground didn't have any bacteria you couldn't grow clover or peas or beans or plenty of other things, because there wouldn't be any

nitrogen factories for the roots. When father ploughs up this clover-field there'll be plenty of nitrogen in the ground, and he's going to take a load of earth from this field and sprinkle it on the field down by the woods so as to be sure there are bacteria in the ground before he plants his peas."

"Bacteria," repeated Ruth. "Isn't it wonderful! How do you spell it?"

"Oh, I don't know," returned Clark, as he moved away. "I must go down and help father now. Mother'll tell you how to spell it. Father says the bacteria make the bread rise and the preserves ferment. Mother knows about that. Ask her about it."

Red clover in both pots.
Bacteria were used in pot at right.

THE ANIMAL TENT

Chris had been at the circus, and, like all small boys, he was interested in the animal tent. It happened, besides, that just the previous week the teacher had been telling the class in nature study about the animals on the farm—where they had come from, how they had been tamed, and a great many other interesting things about their life and habits. At all events, as a result of the circus Chris had come home very tired; but, weary as he was, he insisted on going out with his father to the barn to do the chores. By this time it was quite dark, and when his father was busy with the lantern fixing up the cattle for the night, Chris lay down to rest on a pile of straw which was lying temptingly in one corner of the stable.

He had not lain there very long before it seemed to him that the stable around him was somehow undergoing a mysterious change. Instead of his father's lantern there appeared to be a myriad dazzling lights ; the dingy walls of the stable took the form of a spacious tent; and instead of the stalls of the cattle and horses there were rows and rows of raised seats crowded with people who were waiting eagerly for the circus to begin.

And then a great door at one end of the tent opened and the strangest sort of procession began to come in. First of all came a drove of queer-looking animals that Chris might have taken for horses, only they were smaller and had toes instead of hoofs, and were striped something

like the zebras that he had seen at the circus that very day. Close behind these wild horses came a pack of wolves, which were strangely tame, Chris thought—but of course these were animals in a circus—and then as he looked at them he remembered what his teacher had told him about dogs being descended from wolves. The wolves, too, were followed by the queerest kind of cattle that Chris had ever seen—some with humps on their shoulders, some that looked like the buffalo that he had seen in pictures, and one that looked like the yak, which Chris's teacher had described as "a cross between a cow, a horse, and a load of hay."

Then came the different members of the sheep family, with some of their far-away cousins—slow-plodding camels, "bighorn" mountain-sheep, goats, llamas, and merinos—fine old patriarchs with great, curled horns and fleecy, wrinkled necks.

The pit of the tent was by this time getting pretty well crowded; but the strangest company of all was still to come. Chris had seen the elephant and the rhinoceros and the hippopotamus and the tapir in the animal tent, and if any one had told him then that all these animals were members of the pig family, he would have found it hard to believe—but, sure enough, here they were; and in the same company there was a wild boar with great, fierce tusks; and a deer-hog that looked very much like a pig on stilts; and a queer-looking animal called a peccary, which came from Brazil; and, last of all, a whole drove of little Chinese pigs from which, as Chris had been told, his own barn-yard family had mainly descended.

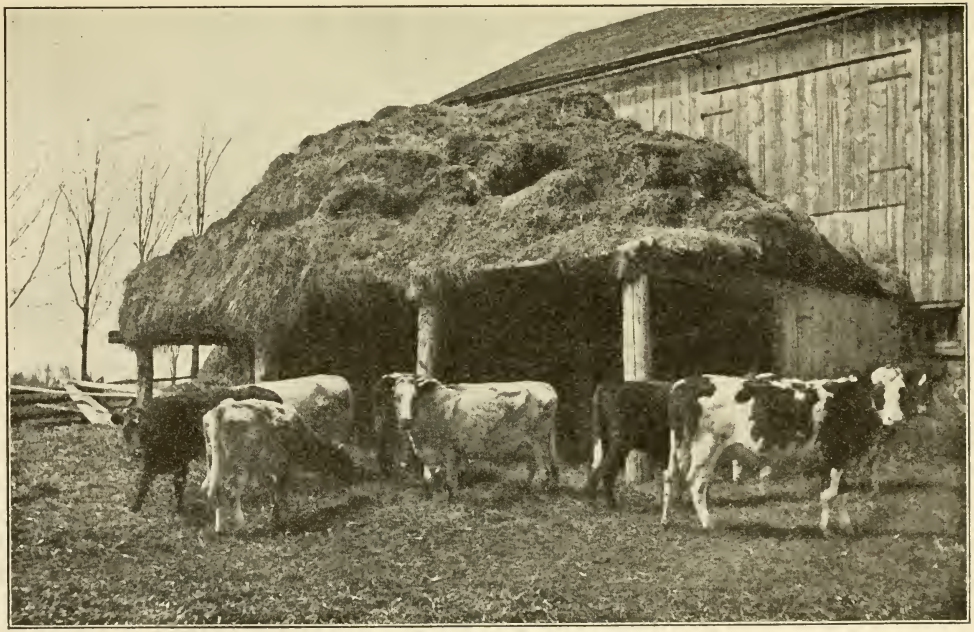
And now that they were all in the tent and the doors

fast shut, Chris began to feel a little anxious, for some of them looked, indeed, very wild and fierce. But at this moment another wonderful thing happened. A door opened in a little cave at one side of the tent, and out crawled the strangest looking man that Chris had ever seen—a hairy creature, with a low forehead and a dull, stupid face, and carrying in his hand a heavy club. Chris never rightly knew what happened next, but it seemed to him that the cave-man waved his club over the heads of all the animals, and suddenly, to Chris's astonishment, in a twinkling all the animals were changed. Instead of the herd of wild horses there appeared a splendid group of modern breeds, fine Belgian draught-horses, fiery Percherons from France, Clydesdales from Scotland and Shires from England, American trotters and English thoroughbreds, and fine carriage-horses of every possible kind.

When Chris looked to see what had become of the pack of wolves, he could scarcely believe his eyes. Such an assortment of dogs he had never seen before! It seemed to him that every imaginable size and breed of dog must be there, for he could not even begin to distinguish all the varieties, much less to name them.

The buffalo, too, had gone, and all the other queer-looking "cattle" with them, and their place was taken now by Holsteins, Ayrshires, and Jerseys and Guernseys, and beef breeds such as Shorthorns, Herefords, and Galloways, which Chris had seen with his father at the fall fair.

And beyond them, where the camels and llamas and mountain-sheep had appeared only a moment before, there were gathered now a flock of sheep and lambs,



It looked like the old barn-yard at home.

Southdowns, Shropshires, and Cheviots; long-woolled Leicesters and Cotswolds, and wrinkled Merinos, and half a dozen other kinds which Chris had never seen before. The tent seemed less crowded now, too, for the elephant and rhinoceros and all the other big animals had gone and in place of them there appeared a drove of grunting swine—black Berkshires and Poland-Chinas, red-haired Duroc-Jerseys, and large-boned Chester-Whites, and other well-known breeds.

During all this time Chris had been so interested in what was going on in the pit that he had forgotten all about the other people who were looking on. And now when he looked around, you may imagine his surprise to find that the crowd were all gone, and that his father and he were left alone; and, stranger still, when Chris looked back to the pit it was quite empty. The splendid horses and cattle and dogs and sheep and swine had all disappeared as quickly and mysteriously as they had come. And now Chris was quite ready to go home; but before he could move, the tent suddenly changed again, and it seemed to him now that it looked like the old barn-yard at home; and when the gate opened at the far end, in there marched, in single file, all the creatures that Chris knew and loved—Old Bess, with her colt; and Dan and Bill, the plough-horses; and Brindle and Beauty and all the other cows in the herd; and Nan, the tame sheep; and the flock of Southdowns from the back pasture; and the old mother pig with her litter—and Rover,—where was Rover? Ah, yes, here he comes. "Here, Rover, Rover, Rov——"

And as Rover bounded forward he gave a joyous bark.

At this the lights of the circus suddenly went out, and Chris awoke to find himself in the dimly-lighted stable, with Rover, good old dog, sticking his cold nose affectionately in his face.

THE COUNTRY BOY'S CREED

I believe that the Country which God made is more beautiful than the City which man made; that life out of doors and in touch with the earth is the natural life of man. I believe that work is work wherever we find it, but that work with Nature is more inspiring than work with the most intricate machinery. I believe that the dignity of labor depends not on what you do, but on how you do it; that opportunity comes to a boy on the farm as often as to a boy in the city, that life is larger and freer and happier on the farm than in the town, that my success depends not upon my location, but upon myself—not upon my dreams, but upon what I actually do, not upon luck, but upon pluck. I believe in working when you work and in playing when you play and in giving and demanding a square deal in every act of life.

EDWIN OSGOOD GROVER.

SEPTEMBER

The goldenrod is yellow;
The corn is turning brown;
The trees in apple orchards
With fruit are bending down.

The gentian's bluest fringes
Are curling in the sun;
In dusky pods the milkweed
Its hidden silk has spun.

The sedges flaunt their harvest
In every meadow nook
And asters by the brookside
Make asters in the brook.

From dewy lanes at morning
The grape's sweet odors rise;
At noon the roads all flutter
With yellow butterflies.

By all these lovely tokens
September days are here,
With summer's best of weather
And autumn's best of cheer.

HELEN HUNT JACKSON.

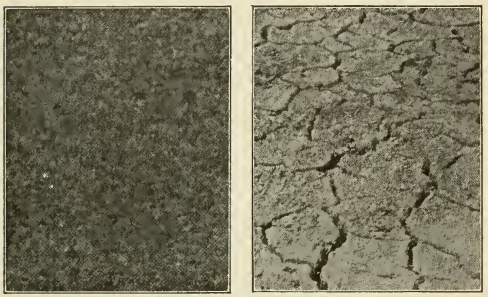
THE SOIL

In order that you may know how to make a good garden you ought to know something of the different kinds of soil that you may find on your farm and what kinds of plants will grow best in each. One way to learn about soil is to get samples of various kinds and study them; another way is to visit different places in the neighborhood and see for yourself the kinds of soil and what kinds of plants the different soils produce. In order that we may learn something about soils I am going to ask you this morning to visit with me in turn the sandy lake shore, a field of heavy clay, a swamp, and lastly, one of the fields on a farm where you find a mixture of sand and clay.

Along the lake shore you are likely to find little else but pure sand. Examine a handful of this sand and you will see that it is made up of small particles of stone. Indeed, if you were able to take great rocks, of the kind that are known as sandstone, and grind them up very fine, the rock-powder or rock-dust would be simply pure sand. Men who have studied this subject tell us that ages ago much of the surface of the earth was covered with rock; but in various ways, chiefly by the action of water, the rock has been worn down and ground into sand.

If you look at the ridges of sand along the shore, you will not find many plants or shrubs growing on them, for, as you know, plants depend on the soil for the greater part of their food; and although pure sand contains most of

the mineral foods which the plant requires, yet it lacks some of the things which the plant needs. Besides, you will notice that, as it has not rained for several days, the sand is very dry. The coarse particles do not hold the water, and the sandy soil does not contain the amount of moisture that plants require for their growth.



The soil on the left had humus added and held water, while the soil on the right had not.

Let us, after leaving the lake shore, visit a field where the soil is made up of heavy clay. If you could examine a lump of this clay under a microscope you would find that it, too, is made up of very fine particles of stone, so small that it is not easy to distinguish them with the naked eye. Since these particles are so small, the water does not pass through them easily, and as a result in wet weather clay is very sticky, and in dry weather it bakes and becomes hard and white. If the weather is favorable and if the ground is thoroughly worked, it is possible to grow excellent crops on clay soil; but no farmer can hope to have the best results from clay land unless he uses some means to loosen and soften his soil.

Both pure sand and pure clay are made up of mineral matter; but if we visit a swamp or marsh we are almost certain to find soil of an entirely different kind. If you

examine the soil in the swamp, you will find that it is very wet and black, and that it seems to produce an abundant growth of certain kinds of plants. If you were to take a pailful of this black earth home with you and dry it out and then put it in a shallow pan over a hot fire, you would find that a good part of it would smoulder away into ashes. As a matter of fact, it is composed almost wholly of dust of decayed plants and animals, and contains very little of the gritty substance found in clay or sand. This black material in the soil, which is due to the decay of dead leaves, grass, etc., is known as *humus*. Humus contains a large amount of plant food, and when it is added to soils that are composed of sand or of clay it helps to enrich them. But its chief value lies in the fact that it makes sandy soil more compact, and helps to make clay soil loose and mellow so that it is less likely either to become sticky in wet weather or to become hard and caked when the weather is dry. It sometimes happens that both sandy and clay soils contain a good deal of humus; but it is wise for the farmer, whenever possible, to add to the supply by ploughing in the grass, leaves, stubble, and other material that will take the form of humus when it decays.

In some parts of the country the soil is very sandy, in others it is composed chiefly of clay. But, as a rule, the best farm land consists of a mixture of sand and clay. Soil that is composed of sand and clay is called *loam*. If it is composed more largely of sand than of clay, the soil is said to be a sandy loam, but if the clay forms the larger part of the soil it is said to be a clay loam. If now you visit a well-kept field where the soil is loam you will find

that the earth is rich and mellow, that it is easily worked, and that it holds a proper amount of moisture. As we shall see later, different kinds of soils are suited to different kinds of crops; but, on the whole, the farm which is composed of a rich loam soil, well supplied with humus and properly drained, is the one which is most likely to return an abundant harvest to the farmer.

Have you a lawn in front of your farmhouse? If so, no doubt you take a pride in keeping it in good condition. If it is neglected and needs attention, how are you to improve it? The first thing to do is to dig the weeds out with a sharp knife. This is a tedious task; but do it little by little, and see how your lawn is improved in appearance. Is the grass thin in some parts of the lawn? After it is free from weeds, scratch the surface with a rake to the depth of half an inch and sow some grass seed. A mixture of redtop, blue-grass, and white Dutch clover, in equal parts, will produce a good sod. After the seed is sown, the ground should be watered, and then rolled. Before winter sets in, treat your lawn with a top-dressing of well-rotted manure; but do not cover the sod too thickly or leave it on too long in the spring.

SEED-TIME AND HARVEST*

I. The Grave of Mondamin

Faint with famine, Hiawatha
Started from his bed of branches,
From the twilight of his wigwam
Forth into the flush of sunset
Came, and wrestled with Mondamin;
At his touch he felt new courage
Throbbing in his brain and bosom,
Felt new life and hope and vigor
Run through every nerve and fibre.

Thrice they wrestled there together
In the glory of the sunset,
Till the darkness fell around them,
Till the heron, the Shuh-shuh-gah,
From her nest among the pine trees,
Uttered her loud cry of famine,
And Mondamin paused to listen.

Tall and beautiful he stood there,
In his garments green and yellow;
To and fro his plumes above him
Waved and nodded with his breathing,
And the sweat of the encounter
Stood like drops of dew upon him.

And he cried, "O Hiawatha!

*"Hiawatha," from which the following passage is taken, is the story of a legendary Iroquois hero, who gave to the Indians the arts of peace and civilization. According to the Indian myth, he taught them agriculture, navigation, and medicine, and gave them control over the forces of nature. In the following passage the story of Hiawatha's victory over Mondamin is the poet's way of telling us how Hiawatha first planted maize, or Indian corn, and how it was harvested for the use of man.

Bravely have you wrestled with me,
And the Master of Life, who sees us,
He has given to you the triumph!
Make a bed for me to lie in,
Where the rain may fall upon me,
Where the sun may come and warm me;
Strip these garments, green and yellow,
Strip this nodding plumage from me,
Lay me in the earth, and make it
Soft and loose and light above me.
Let no hand disturb my slumber,
Let no weed nor worm molest me,
Let not Kahgahgee, the raven,
Come to haunt me and molest me,
Only come yourself to watch me,
Till I wake, and start, and quicken,
Till I leap into the sunshine."
And victorious Hiawatha
Made the grave as he commanded,
Stripped the garments from Mondamin,
Stripped his tattered plumage from him,
Laid him in the earth, and made it
Soft and loose and light above him;
And the heron, the Shuh-shuh-gah,
From the melancholy moorlands,
Gave a cry of lamentation,
Gave a cry of pain and anguish!
Homeward then went Hiawatha
To the lodge of old Nokomis,
And the seven days of his fasting
Were accomplished and completed.

But the place was not forgotten
Where he wrestled with Mondamin;
Nor forgotten nor neglected
Was the grave where lay Mondamin,
Sleeping in the rain and sunshine,
Where his scattered plumes and garments
Faded in the rain and sunshine.

Day by day did Hiawatha
Go to wait and watch beside it;
Kept the dark mould soft above it,
Kept it clean from weeds and insects,
Drove away, with scoffs and shoutings,
Kahgahgee, the king of ravens.

Till at length a small green feather
From the earth shot slowly upward,
Then another and another,
And before the summer ended
Stood the maize in all its beauty,
With its shining robes about it,
And its long, soft, yellow tresses;
And in rapture Hiawatha
Cried aloud, "It is Mondamin!
Yes, the friend of man, Mondamin!"

II. The Harvest of the Cornfields

All around the happy village
Stood the maize-fields, green and shining,
Waved the green plumes of Mondamin,
Waved his soft and sunny tresses,
Filling all the land with plenty.

And the maize-field grew and ripened,
Till it stood in all the splendor
Of its garments green and yellow,
Of its tassels and its plumage,
And the maize-ears full and shining
Gleamed from bursting sheaths of verdure.
Then Nokomis, the old woman,
Spake, and said, to Minnehaha:
"'Tis the moon when leaves are falling;
All the wild rice has been gathered,
And the maize is ripe and ready;
Let us gather in the harvest,
Let us wrestle with Mondamin,
Strip him of his plumes and tassels,
Of his garments green and yellow!"
And the merry Laughing Water
Went rejoicing from the wigwam,
With Nokomis, old and wrinkled,
And they called the women round them,
Called the young men and the maidens,
To the harvest of the cornfields,
To the husking of the maize-ear.
On the border of the forest,
Underneath the fragrant pine trees,
Sat the old men and the warriors
Smoking in the pleasant shadow.
In uninterrupted silence
Looked they at the gamesome labor
Of the young men and the women;
Listened to their noisy talking,
To their laughter and their singing,

Heard them chattering like the magpies,
Heard them laughing like the blue-jays,
Heard them singing like the robins.
And whene'er some lucky maiden
Found a red ear in the husking,
Found a maize-ear red as blood is,
"Nushka!" cried they all together,
"Nushka! you shall have a sweetheart,
You shall have a handsome husband!"
"Ugh!" the old men all responded
From their seats beneath the pine trees.
And whene'er a youth or maiden
Found a crooked ear in husking,
Found a maize-ear in the husking
Blighted, mildewed, or misshapen,
Then they laughed and sang together,
Crept and limped about the cornfields,
Mimicked in their gait and gestures
Some old man, bent almost double,
Singing singly or together:
"Wagemin, the thief of cornfields!
Paimosaid, who steals the maize-ear!"
Till the cornfields rang with laughter,
Till from Hiawatha's wigwam
Kahgahgee, the king of ravens,
Screamed and quivered in his anger,
And from all the neighboring tree tops
Cawed and croaked the black marauders.
"Ugh!" the old men all responded,
From their seats beneath the pine trees!

HENRY WADSWORTH LONGFELLOW (ADAPTED).

After the corn has been cut.

THE SPRING VALLEY CORN CLUB

The Spring Valley Corn Club now consists of more than twenty boys and girls. But when it was first formed there were only four boys in it. It happened one October evening when we four—Harry Parker, Jim Collins, George Brown, and myself—were over at Parker's, that we got to talking about the growing of corn and arguing as to why Mr. Parker's corn crop that year was a failure. Sam Parker, Harry's older brother, it seems, didn't like our talk, and he remarked—rather sarcastically, I thought:

"Humph! A lot you know about corn. Better try it yourselves, if you think you can do it any better."

That remark of Sam's—though it doesn't appear in the minutes of the club—was really the thing that gave us the first thought of forming a corn club. Before we left

for home that night we had gone so far as to agree to ask our fathers for an acre of ground each, in which to grow corn, and we had agreed also to work together in order to learn all we could about corn, and to help each other with our one-acre plots when the proper time came.

When I got home and explained the scheme to father he was just as eager about it as any of the boys, and I think if we had let him he would have joined the club, too. It was he who suggested the idea of holding meetings of the club during the winter for the sake of finding out all we could about corn. And Mrs. Parker, too, made the suggestion that at some of our meetings we should have some one there to give us a talk about corn-growing. The boys thought that this was a capital idea, and we decided to ask Miss Stuart, the teacher in the Spring Valley school, to give us a talk at our first meeting.

I forgot to mention that George Brown's father raised objections at first; and before he would agree to our plans we had to make arrangements about our seed-corn, our ploughing and other expenses, and our returns. This was, of course, a good thing for us, for it made us think of some of our difficulties; and after these arrangements were made we were better satisfied, and Mr. Brown was interested in our plans and anxious to help. It was at his home that we held our first meeting, and we were surprised and not a little pleased to find that some of the neighbors had come in also to be present as "visitors." At the first meeting of the club Miss Stuart had taken for her subject, "The Foods That Corn Needs." In order to make her explanation clear she put up before us a large

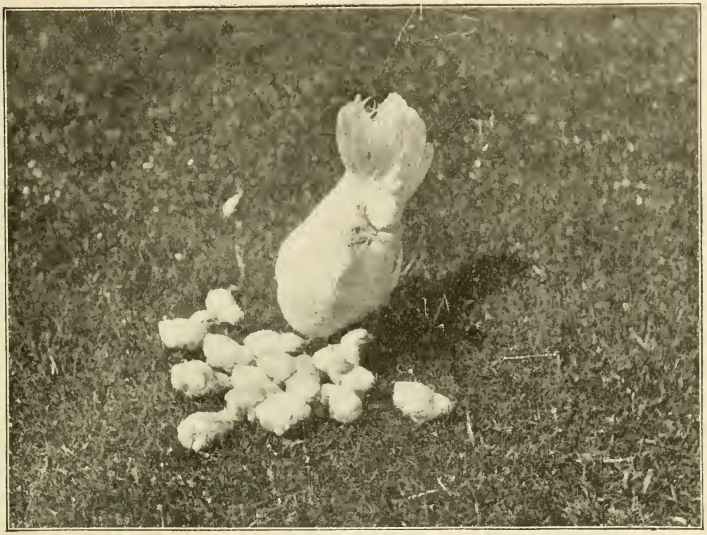
sheet of cardboard on which she had marked the different kinds of foods and how they are provided:

Corn Food	How Provided
Carbon	Carbon dioxide breathed in by the leaves.
Nitrogen	Supplied by legume crops.
Potash	In manure.
Phosphorus	In manure.
Water and Air	Provided by proper tillage.

Carbon, Miss Stuart explained, forms over sixty per cent. of the substance in dry seed-corn. It is breathed in by the plant in the form of gas, through the breathing spaces in the stalks and leaves. These stalks and leaves will not grow unless the ground contains plenty of moisture. The best way to be sure that the ground contains the right amount of moisture is to plough deep, so that the roots will have plenty of space to spread and take up moisture from the soil. The soil, too, must contain an abundance of nitrogen, and for this reason it is best to plant corn in a field in which a crop of legumes, such as peas or clover, has been grown the previous year. Besides containing nitrogen, the soil must be provided also with potash and phosphoric acid, which are most easily supplied by manuring the ground properly. Miss Stuart's explanation was so simple that we could easily understand it, and when I went home I jotted down in the note-book father had given me, the three important things I had learned:

1. Corn should follow legumes.
2. Manure the ground well.
3. Plough deep and till the soil well, so as to supply both air and moisture.

(*To be continued.*)



A happy family.

POCKET-MONEY

When a city boy wishes to earn pocket-money he sells newspapers, becomes a delivery boy, or runs errands. What can a country boy do if he, too, aims at having a little bank account of his own? He has a way that is quicker and easier and much more interesting than any of the means the city boy has. He can raise poultry! The cost of feeding poultry on a farm is low, and the labor of caring for it is lighter than that connected with other farm animals. The profits are certain and quick, since the demand for eggs and for chickens suitable for table use is large and continuous.

But to make it pay to keep hens you must give them

attention and not leave them to take care of themselves. If you are to get good returns you must know how to take care of them at all seasons of the year. It is true that a hen left to herself on a farm will pick up her own living and lay perhaps seventy-five eggs in a year; but a hen that is well cared for will lay at least three or four times that number of eggs. If you are to be a success in this business of making hens pay, you must work in a business-like way and not trust to "hit-or-miss" methods.

First of all, decide which breed of hen you are going to keep. There are over one hundred varieties from which to choose. Some are general-purpose breeds, that is, they are good fowl for the table and yet are good layers. Others are meat breeds, that is, they are large, grow rapidly, and fatten easily. Others, again, are egg breeds, that begin laying while younger and continue for a longer period than other varieties. Then there are ornamental breeds, such as game-birds; but these are of no practical use on the farm.

Having chosen your poultry, you must provide a house for them. While they may get along in summer by roosting along stable stalls or on wagon tongues—as so many farmers allow them to do—in winter they must have a clean, light building all to themselves. Now, there are almost as many different styles of hen-houses as there are kinds of hens, and you may make yours as plain or as ornamental as you choose. But whichever kind you build, there are certain requirements that this house must satisfy.

It should be built on well-drained ground; for dampness is most injurious to chickens. It should be large enough

to allow four or five feet of floor space for each bird, and ought to be so ventilated as to allow plenty of fresh air to enter without causing draughts. Sunlight is another necessity, and you can make no mistake in building the poultry-house to face the south. If possible, build it on a concrete foundation, as this will keep out rats.

The inside of the house should be so finished and furnished that it may be easily kept clean. It is easier to keep vermin away if the walls are lined with well-matched boards or are plastered. A cement floor can be cleaned more easily than any other kind. As fowls spend much time on their roosts, these should be comfortable. Removable nests are best, as they can be readily sunned and cleaned.

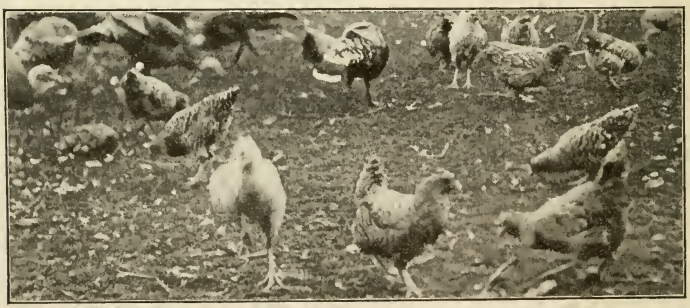
The proper feeding of hens is as important as proper housing. In summer this is a simple matter, for the hens will pick up the larger part of what they need from material that would otherwise be wasted. Scattered grain left from the feeding of other animals; weed seeds, grass, and other green plants; worms and bugs—all help to give the necessary variety to the food. In winter, however, your flock depends upon you to supply their needs. And it is in winter, when eggs are at their highest price, that you must do everything possible to encourage your hens to lay steadily. It is well known that hens will not lay unless they are properly fed. Remember that fowls require grain, meat or milk, mill feeds such as shorts, green foods, sharp grit, and water; and see that no one of these elements is left out. If the winter diet is made as nearly like the summer food as possible, and the hens are given exercise by having to scratch for part of their food, and if

they are kept sufficiently warm, they will lay as freely in winter as in spring.

There are a good many other things that you will need to learn in order to make a success of poultry-raising. Find out from experts all you can about how to secure good hatches, how to feed and care for very young chicks, how to fatten fowls for market, how to prevent diseases, and how to deal with bad habits such as that of egg-eating. In some farm communities, boys and girls have formed poultry clubs in order to learn all they can on the subject and to add interest to their work.

If you keep to a first-class breed you can increase your profits by selling settings of eggs at high prices, and perhaps by winning prizes at agricultural exhibitions. In any case, keep a record of your flock, noting the number and value of eggs collected each day, and calculate the income from all sources, as well as all expenses. In this way you can know exactly what your profits are, and you will find that, besides having a hobby that is most interesting, you have an ever-increasing fund of pocket-money.

M. B. Stevenson.



Picking up breakfast.

THANKSGIVING SONG

For flowers that bloom about our feet;
For tender grass, so fresh, so sweet;
For song of bird and hum of bee;
For all things fair we hear or see—
Father in heaven, we thank Thee!

For blue of stream and blue of sky;
For pleasant shade of branches high;
For fragrant air and cooling breeze;
For beauty of the blooming trees—
Father in heaven, we thank Thee!

For mother love and father care,
For brothers strong and sisters fair;
For love at home and school each day;
For guidance, lest we go astray—
Father in heaven, we thank Thee!

For Thy dear, everlasting arms,
That bear us o'er all ills and harms;
For blessed words of long ago,
That help us now Thy will to know—
Father in heaven, we thank Thee!

A RACCOON HUNT

It was getting near cooning time, and, like most boys, I was enthusiastic; and I eagerly watched the ripening of the corn and examined the margin of the creek from time to time to see if there were any fresh coon tracks in the mud and sand.

Our woods was an exceptionally large one,—nearly fifty acres of virgin forest; but it was broken by a large creek or river flowing through the lower end. Adjoining the lower half of the woods was a large field of corn; and as this field was a safe distance from the house and from Jerry, the farm dog, it was an ideal situation, just after a coon's own heart.

Our first coon hunt was a failure out and out. "Too early to go coonin' yet," said the hired man. "Coons don't take to the corn till it's jest a wee bit tough;" and besides there was no dew on the grass; and every farmer's boy knows that you can't track a coon, or any other wild animal for that matter, without dew. So the dogs took to chasing rabbits in the corn and the hired man to telling coon stories, and our first coon hunt ended early in the night with a long rest on the rail fence, while we feasted on the small sweet yellow pears which we had gathered from an old tree in a deserted remnant of an orchard at the back of the farm.

Notwithstanding my own eagerness, the hired man refused to risk his reputation on another coon hunt for a full fortnight, and this time we certainly had enough of

the sport. It was an ideal night, quiet and calm, with hardly a breath of wind, and a heavy dew on the grass. We started shortly after dark, for when the corn is close to the woods the coons come out early, and by nine o'clock the feasting may be over. Before we had reached the cornfield the moon had already begun to silver the east; and before long the whole stretch of woodland, together with stream and valley, were bathed in a mellow radiance, while the fields of stubble with their shadowy fences died away in the misty distance and the lights of the farms behind twinkled dim and faint in the haze of the moonlight.

As we neared the cornfield we walked very stealthily and spoke in low tones, while the dogs threaded the lanes of corn in every direction. We had not gone far before the hired man suddenly stopped, broke off an ear of corn and held it up to view. There was no mistake about it this time; one side of the ear had been freshly stripped and bitten. Now there was no doubt about it—to-night, at least, there were coons in the corn.

Suddenly in the midst of our whispered consultation, Jerry, our best coon dog, flung past us, sprang for a hole in the fence, and a moment later was giving tongue a hundred yards away in the woods. We followed with a mad rush, tumbling over each other in our haste and excitement. The chase led us in the direction of a big maple, but before we reached it we were brought to a sudden standstill by the dogs at the foot of a tall basswood that stood on the very edge of the steep, sloping bank, overlooking the stream. Out on the end of one of the thickest branches we distinctly saw the bunchy form

of a big coon, with two small eyes glimmering like faint sparks of light from amid the leaves.

In our party guns were strictly forbidden, as being beneath the dignity of the sportsman at this season of the

Watchful waiting.

year at least. So there was nothing for it but for the hired man to put on the climbers, go up the tree, and shake him out.

It took a good deal of shaking, but to our delight down he came at last with a thud, and in an instant the dogs were upon him; and then the unexpected happened! When a coon fights it is generally on his back, and then teeth and claws and powerful hind feet are victorious

weapons. Perhaps one of the dogs rushed in too quickly, but, at all events, the coon secured a grip on his adversary's neck; and, quicker than it takes to tell, coon and dogs alike, biting, scratching, snarling, had rolled over and over down the steep bank and into the stream. A moment later the coon was shambling up the opposite bank and was lost to view in the woods beyond.

We lost no time in following, getting our feet wet in the creek by the way, and this time the dogs led us straight to the big maple. Here our chase ended, for the monster maple was alike too big to climb or to think of cutting down.

On the other side of the wood we came upon an old she-coon with two half-grown cubs travelling along the fence. The cubs took to a tree, but the old coon was killed by the dogs, and the hired man removed the skin, grumbling all the while that the fur was not thicker and a blacker shade; for, of course, the winter skins are always better, and the blacker the fur the bigger price it will bring.

We ended with a bonfire and a corn roast, to which the girls of the farm were invited. The hired man insisted that every boy should eat his own length in corn, but he failed to set the example himself; and so we finished off with musk melon and fresh cider, and told the usual stories and laughed at the usual jokes, until the fire had died out and it was time for the happy evening to end.

Though we should be grateful for good houses, there is, after all, no house like God's out-of-doors.

R. L. Stevenson.

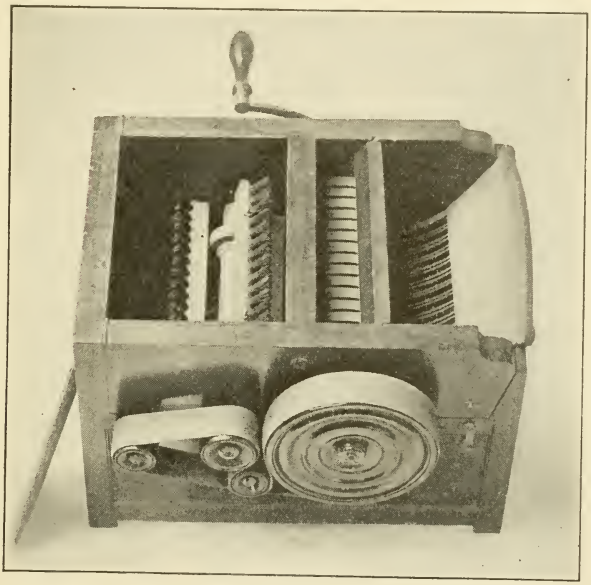
THE STORY OF COTTON

In early times, travellers returning to Europe from India reported that they had seen wool growing wild on trees. This "wool" was, of course, none other than cotton. The people of India had already learned the arts of weaving and dyeing, and in the course of time traders began to bring back with them from the East, fine cotton fabrics. In later times, when the people of Europe had learned more about this wonderful "wool-bearing" plant, an attempt was made to introduce it into southern Europe; but owing to the climate, only a small amount could be grown in European countries.

When America was discovered, Columbus found the cotton-plant growing wild in the tropics; and this was one of the reasons why he at first believed that he had reached India. Later on, when the first settlements were made in the Southern States, the colonists attempted to grow cotton as a cultivated crop; but on account of the cold winters, the plants died down every year; and when at last the settlers succeeded in producing cotton that was suited to the climate, they found that in the case of this new variety it was very difficult to separate the lint from the seed. On those farms where cotton was grown, the members of the family spent their evenings in picking lint, and a shoeful of cotton was considered a good evening's work.

Among the colonists were men and women who had learned the arts of spinning and weaving before coming

to America; and the spinning-wheel and the primitive hand-loom were brought into use for spinning and weaving cotton. But the fibre of the cotton which was grown in the Southern States was so short and coarse that it could



Eli Whitney's cotton-gin.

not be spun into fine thread without breaking; and when made into cloth it was usually mixed with wool or flax. At best, the manufacture of cloth was a slow process, for with the old spinning-wheel only a single thread could be spun at one time, and the weavers found it difficult to get enough thread to keep their looms going. In the year 1769, however, an English mechanic, named Ark-

wright, invented a spinning-frame, by means of which a large number of threads could be spun at one time; and about the same time a Lancashire weaver, named Hargreaves, invented a machine known as the spinning-jenny (named after his daughter Jenny), which made it possible to spin fine, strong, cotton thread which would not break in the weaving. Later on, a weaver named Compton combined the spinning-frame and the spinning-jenny into a single machine which was known as a "mule."

But now that it was possible to spin cotton thread as fast as it was needed, a new difficulty appeared. It was impossible to obtain a large supply of cotton because the lint had to be picked by hand, and this, as we have seen, was a very slow process. In 1793, however, an American mechanic, named Eli Whitney, invented a cotton-gin (*gin* is a shortened form of the word *engine*), by which the lint could easily be separated from the seed; and, needless to say, this invention gave an immense impetus to the growing of cotton in the South.

Up to this time most of the cotton grown in America had been sent to England, and after the Arkwright machines were invented, their secrets were guarded very carefully. But in 1790 a weaver named Samuel Slater, who had learned his trade in England, succeeded in reproducing these machines in America. From that time forward, the manufacturing industry steadily increased, until at the present time nearly two thousand cotton-mills are in operation in the United States.

HOW PLANTS ARE FED

The boys and girls on the farm would think they were badly treated if they did not get three good meals a day, and most farmers are very careful about feeding the horses, cows, pigs, and other animals on the farm. But how about feeding the plants? Some farmers never think that the wheat, and oats, and potato plants, in fact all the plants on the farm, need to be fed, just as the live stock or the farmer's family themselves. Of course, when the soil is in good condition, the plants are able to help themselves to the food they need, but sometimes they cannot get the things they want, and then they starve, just as people do who are not fed.

Plants get their food partly by breathing and partly by drinking it in. From the air they breathe in a gas which is known as carbon dioxide, and this gas supplies them with carbon, which is necessary to their growth. From the soil the tiny rootlets drink up the water, and this water contains many different plant-foods which have been dissolved in it. Every crop that is taken from the fields helps to use up these plant-foods, and if this continues, the soil at length becomes "worn out," or, in other words, the supply of plant-foods becomes exhausted.

The three substances which are most frequently lacking in worn-out soil are *phosphoric acid*, *potash*, and *nitrogen*. When seeds shrivel up and do not grow, it is sometimes a sign that there is not enough phosphoric acid in the soil. Barn-yard manure generally contains a good supply of this acid, and in addition, artificial fertilizers

composed of bone-dust or of rock-dust containing phosphorus are frequently used.

When fruits are undersized or imperfect, it is sometimes a sign that the plant has not received a sufficient supply of potash. As a matter of fact, there is generally enough potash in the soil to serve as food for the plants, but it is sometimes "locked up" with other materials in such a way that it does not dissolve in the water. The farmer may either add a supply of fresh potash to the soil or he may take some means to release the supply that is "locked up." When lime is added to the soil, some of this potash is generally set free. Barn-yard manure contains a certain amount of potash, and wood-ashes also are of value as a fertilizer on account of the amount of potash they contain.

Showing the effect of the absence of nitrogen, potassium, or phosphorus.

The pot on the left lacks potash; the next lacks nitrate; the next lacks neither phosphate, potash, nor nitrate; the last lacks phosphate.

When plants are yellow or sickly and refuse to grow, it is sometimes a sign that there is not enough nitrogen in the soil; for the growth of leaves and stalks depends

largely upon the supply of nitrogen. Nitrogen is a gas and it forms a large part of the air we breathe; but in order that it may be used as a plant-food it must be taken into the plant through the roots, and the farmer must see that there is a sufficient quantity of nitrogen in the soil. When the ground is turned up by the plough and the harrow, so that fresh surfaces are exposed to the air, the nitrogen in the air has a chance to penetrate it. A certain amount of nitrogen also is contained in manure and in certain other fertilizers that are ploughed into the soil. But the chief means upon which the farmer must rely for the proper supply of nitrogen is the cultivation of *bacteria* in the soil. What bacteria are and how they are cultivated we have read elsewhere.

Most of the other foods which the plant requires are minerals which are found in abundant quantities in the soil, and the farmer does not need to think about renewing the supply. But even if the soil does contain all the necessary plant-foods, there may be other reasons why the ground does not produce a good crop. Sometimes the particles of soil are so tightly packed that the air does not have a chance to get in around the roots, and if the roots do not get a proper amount of air, the plant will not thrive. Sometimes, too, the ground holds too much moisture and the water fills up the air-spaces in the soil. Or it may happen, on the other hand, that the ground is too dry, and without moisture it is impossible, as we have seen, for the plant to obtain its food. The farmer, then, must not only be careful to supply the proper plant-foods, but also to see that the soil is in a proper condition for the plant to use them.

INDIAN SUMMER

Along the line of smoky hills
  The crimson forest stands,
And all the day the blue-jay calls
  Throughout the autumn lands.

Now by the brook the maple leans
  With all his glory spread,
And all the sumacs on the hills
  Have turned their green to red.

Now by great marshes wrapt in mist,
  Or past some river's mouth,
Throughout the long, still autumn day
  Wild birds are flying south.

WILFRED CAMPBELL.

THE CAMPAIGN

It was about the time when the great European war was at its height. Dick had been reading about the siege of Paris in 1870 and the famous siege of Antwerp in 1585.

"I wish I could go to the war," he exclaimed, as he threw down the book he was reading. "It must be great!"

"Don't be a fool, Dick!" replied Milton. "You don't want to go to the war."

"Don't I?" snapped Dick. "I just wish I were old enough and I'd show you!"

"Yes," said Nora from across the table, "and I'd go and be a Red Cross nurse to take care of you when you were wounded, and Milton here——"

"I'd stay right here," interrupted Milton, "and grow grain and potatoes for you and Dick to live on!"

At this point Uncle Ben, who had been sitting in the big chair by the fireplace reading a farmers' magazine, looked up from his reading and remarked:

"If Dick really wants to go to war he can begin fighting to-morrow."

"Where?" inquired Dick eagerly.

"Where? Why, right here on this farm! You didn't know it was besieged, did you? Well, it is, and this farmhouse is the fort. Some of the enemy have taken cover in the woods; some of them have thrown up earthworks

in the fields, and yesterday, would you believe it, I saw an aviator spying out the farm. Down around the outer forts the enemy keeps under cover,—but what do you say? If Dick here wants to play war, let us begin right here on this farm. Only I want to be appointed general."

Dick thought it would be great fun, and Nora and Milton agreed to join on one condition—that Nora should not be called upon to do any of the actual fighting. And right there and then Uncle Ben proposed that they draw up a plan of campaign. The first thing, they all agreed, was to make an estimate of their enemies, and while the boys made suggestions, Uncle Ben wrote down a list of the different enemies to be attacked. When the list was complete it ran somewhat as follows:

The Army of Rats—thoroughly intrenched in the barn; one detachment in the root-house and cellar.

The Army of Wood-Hares—the enemy's scouting column —in the brush piles and hedges and the deep grasses in the fields.

The Army of Hawks and Owls—the aviation corps of the enemy.

The Army of Woodchucks and Skunks—the sappers and miners.

The Army of House-Sparrows, and the Army of Field-Mice, who interfered with the food supplies.

The Army of House-Flies, who brought disease and pestilence into the camp of the defenders.

Besides these, there were the great armies of bugs, beetles, and worms—and, worse than all, a vast, onrushing horde of weeds which could only be driven out at the point of the bayonet; for what is a hoe, after all, but a bayonet of

a special kind, with the point hammered out and turned down?

"It will be a long war," said General Ben, as he laid the list down on the table. "It is sure to last through the winter; and next spring and summer there will be a great deal of hard fighting. If we are going to win we must go about it systematically; and the first thing for us to do is to get all the information we can about the enemy. Suppose we leave it to Nora to read up what the great generals have written about the best means of carrying on a war like this. And Dick and Milton here will go down and spy out the enemy and find out where they are intrenched, and after we have all the information we need we shall be ready to declare war."

"Let us make it a surprise attack," said Dick. "Where shall we begin, uncle—I mean, General Ben?"

General Ben pointed out that, since it was late in the season, it would be useless for them to attempt to make an attack on the army of insects and weeds until spring; and after further consultation it was agreed that they should begin the campaign by planning an attack on the army of rats, and that in the meantime they should try to learn as much as possible about the best means of meeting their other enemies.

It took Nora several days to gather the necessary information as to the best means of making an attack on the rats, but when finally her report was ready it ran somewhat as follows:

"There are many different kinds of rats, but the one that gives farmers most trouble is the brown, or Norway, rat. It destroys the grain in the fields and in the barns;

it eats eggs and kills young poultry; it carries disease from place to place; and, besides this, it does great damage to farm buildings. The best way to fight against rats is to starve them out by keeping grain and other supplies in rat-proof buildings. Silos, grain bins, and floors of stables should be made of cement, or else the corners and angles, through which rats usually gnaw, should be covered with sheet-iron. If this is impossible, the walls and floors should at least be lined with strong wire screening. All rubbish piles which may form hiding-places for rats should be removed, and stacks should not be left standing any longer than is necessary. Rats may be destroyed by means of traps or by the use of poison or gas. But both poison and gas must be used with great care, and, on the whole, rats can be more easily destroyed by the use of traps than by any other means."

After Nora's report had been considered, it was decided to begin the attack at once. General Ben and the boys agreed to go over the outer forts and see whether it was possible to destroy any of the dug-outs and trenches and the bomb-proof shelters of the enemy; and at the same time General Ben undertook to repair the breaches in the walls and, if possible, cut off all food supplies. The boys in the meantime asked permission to read up everything they could find regarding the use of traps.

"It isn't quite fair, you know," said Milton, "to use either gas or poison in a real war, but it is all right for us to lay 'traps.'"

The military authorities who wrote about traps were pretty generally agreed that the "guillotine" trap was the best kind to use, and, as they are very cheap, General Ben

laid in a supply of half a dozen the next time he went to town. But both Dick and Milton were very anxious to try the barrel trap, and the "deadfall" or the "figure-four," and General Ben agreed to help them to make both kinds, on condition that they should keep them out of the way of the poultry and other farm animals.

The campaign against the rats resulted in a general cleaning up of the farmyard and an overhauling of the grain bins and storehouses, and enough rats were caught in the traps in the first week to encourage the boys to continue the campaign throughout the winter; and Nora, who was keeping the official bulletins of the war in her diary, made the following entry:

"Nov. 27. During the past week General Ben, Lieutenant Dick, and Major Milton made a fierce attack on the army of General Brown-Rat. A large number of the enemy have been killed or wounded, including a number of officers. All prisoners were promptly put to death. Major Milton was slightly injured by falling into a trap which he had laid for the enemy."

(*To be continued.*)

This is a good time for the well-trained, farm-minded young man or woman to go into agriculture; but one should be sure that he has the qualifications. There is no need that farming provide only a narrow and deadening life. One may express there all the resources of a good education.

L. H. Bailey.

HOMESICK

I want to go back to the orchard,
The orchard that used to be mine;
The apples are reddening and filling
The air with their wine.

I want to wake up in the morning
To the chirp of the birds in the eaves,
I want the west wind through the cornfields,
The rustle of leaves.

I want the old song of the river,
The little low laugh of the rills,
I want the warm blue of September
Again on the hills.

I want to lie down in the woodland
Where the feathery clematis shines,
God's blue sky above, and about me
The peace of the pines.

O nights, you are weary and dreary
And days there is something you lack,
To the farm in the little old valley
I want to go back.

Alice Cain.

WINTER

BACK TO THE SOIL

"Every farmer boy wants to be a school-teacher, every school-teacher hopes to be an editor, every editor hopes to be a banker, every banker hopes to be a trust magnate, and every trust magnate hopes some day to own a farm and have chickens and cows and pigs and horses to look after.

"We end where we begin."

JACK FROST

The Frost looked forth one still, clear night,
And whispered: "Now I shall be out of sight;
So, through the valley, and over the height,
In silence I'll take my way.
I will not go on like that blustering train,
The wind and the snow, the hail and the rain,
They make so much bustle and noise in vain;
But I'll be as busy as they."

Then he flew to the mountain, and powdered its crest,
He lit on the trees, and their boughs he dressed
In diamond beads; and over the breast
Of the quivering lake he spread
A coat of mail, that it need not fear
The downward point of many a spear
That hung on its margin, far and near,
Where a rock could rear its head.

He went to the windows of those who slept,
And over each pane, like a fairy, crept;
Wherever he breathed, wherever he stepped
By the light of the moon were seen
Most beautiful things: there were flowers and trees;
There were bevies of birds and swarms of bees;
There were cities, with temples and towers—and these
All pictured in silver sheen.

But he did one thing that was hardly fair;
He peeped in the cupboard, and finding there
That all had forgotten for him to prepare—
"Now, just to set them a-thinking,
I'll bite this basket of fruit," said he;
"This costly pitcher I'll burst in three;
And the glass of water they've left for me
Shall 'tchick!' to tell them I'm drinking."

HANNAH F. GOULD.

In Jack Frost's country.

KEEPING UP THE SOIL

One of the first things the farmer must think of, if he wishes to keep his farm in proper condition, is how he can return to the soil the plant-food that is taken off with the crops;. for if he continues to rob the soil without making any returns, it is certain that, sooner or later, the supply of plant-foods will be used up and the soil will become "worn out."

Some farmers sell their entire crop every year, and in order to keep the land in good condition they must, of course, buy fertilizers to put on it. But the more intelligent farmers are coming to see that it is better in most cases to feed the crops to their own live stock, and to return the plant-food to the soil in the form of manure. When the farmer sells his fat cattle, sheep, or hogs, he gets a good price for his grain in another form, and is, besides, able to return to the soil about seventy-five per cent. of the plant-foods which he has taken off. Each ton of manure contains about ten pounds of nitrogen, five pounds of phosphoric acid, and ten pounds of potash, for which the farmer would have to pay at least $2.25, if he had to buy it. And, besides this, the manure improves the soil by providing organic matter, which keeps up the supply of humus.

Since manure is of such value to the farmer, proper care must be taken to see that none of its strength is lost. On many farms little care is taken to preserve the liquid manure, although it is in reality more valuable than the

solid material in the manure. But in the better class of stables the floors are now made of concrete, so as to prevent the liquid manure from being drained off into the ground; and plenty of bedding is supplied, so as to absorb the moisture.

More than one half of the solid material in manure is soluble; that is, it will dissolve in water, and when manure is left in piles, either in the barn-yard or the fields, and is exposed to the rain, a large part of it dissolves and runs off in little streams or soaks into the ground. There are several ways of preventing this. If it is possible to have the fresh manure taken out to the fields and spread over the ground at once, none of its strength will be lost. But if this is impossible, it should be stored in a manure shed which is roofed over and which has a tight floor to prevent the loss of the liquid manure. But in any case it is best to spread the manure on the land as soon as possible. When the manure is taken to the fields it should not be left standing in piles, but should be spread evenly over the ground.

When manure is left exposed in piles, even in a manure shed, unless care is taken it is likely to ferment through heating, and the nitrogen which it contains evaporates in the form of gas. To prevent heating, the manure should be packed down or else covered with a layer of earth, so that the air will not get at it. It is the bacteria in the manure that cause the gas to form, and unless they are supplied with air the bacteria cannot work.

Besides taking care of the manure that is removed from the stables, the wide-awake farmer will use some means to prevent the manure in the barn-yard itself from being

wasted. On some farms covered sheds are built, in which the stock run loose; and since the manure in these sheds is not exposed to the rain it may be removed, when required, to the fields, without the loss of much of its strength.

A farmer who feeds all his grain to his stock and takes proper care of the manure will be able, in most cases, to keep his soil in good condition without having to use other fertilizers to any great extent. If more nitrogen is needed, it may be supplied by the growth of legumes. Potash is not only contained in the manure itself, but is set free from the soil by the reaction of the manure and the plant refuse that is turned under. Phosphoric acid is the only plant-food which may have to be provided, and it may easily be obtained in the form of acid phosphate or some other fertilizer containing phosphorus. But the farmer who sells his grain and other produce instead of feeding it to his live stock, must, of course, keep up the quality of his soil by the use of commercial fertilizers.

And I must work thro' months of toil,
And years of cultivation,
Upon my proper patch of soil
To grow my own plantation.
I'll take the showers as they fall,
I will not vex my bosom:
Enough if at the end of all
A little garden blossom.

ALFRED TENNYSON.

THE SPRING VALLEY CORN CLUB

(Continued)

The Spring Valley Corn Club met once a month during the winter, and at each meeting some subject relating to the growth and uses of corn was explained and discussed. The evening we met at Jim Collins's home, Herb Patterson, who was Jim's cousin, gave us a talk on some of the uses of corn. I had never heard of corn being used for anything besides food, and I was surprised to learn what a number of things are made from the different parts of the plant. The husks and the stalk, Herb explained, are used to make the finest grades of paper. The stalks contain material that is used in making smokeless powder, and in the manufacture of moving-picture films. Corn-pith is used as lining for the armor-plate of vessels, so that in the case of any small opening below the water-line the water will make the lining swell so as to close the hole. Silk used in making ties is adulterated with material from the pith of the corn stalk. Among the chief products of corn are glucose, or corn syrup, and starch. Starch obtained from corn is used in many different ways, among others in the manufacture of cotton fabrics, paper, mucilage, baking-powder, and icing for candies. The oil from the heart of the kernel is especially valuable because it is free from gum, and it is used not only for table purposes but in the manufacture of artificial butter, toilet-soap, paints, and lubricating oils. From this corn-oil the ma-

terial known as corn rubber is also manufactured. This rubber resembles real rubber very closely, and it is used in making rubber boots and shoes, belting, door-mats, and linoleum; but it does not wear as well as pure rubber. Corn is also one of the sources from which alcohol is manufactured, and denatured alcohol, which is used for heating and lighting, can be made from corn more cheaply than from any other material.

When the meeting was held at Harry Parker's house Mrs. Parker and her daughter Jean had a surprise in store for us. She had promised to show us some of the ways in which corn can be used for food; and she had invited some of the other boys and girls in the section in order to try to interest them in the work of the club. You may imagine how delighted we were to find that she had prepared a tempting array of good things which were made from different materials obtained from corn. Green corn was, of course, out of season, but there were plates of hot Johnny-cake and corn syrup with a "maple" flavoring; corn muffins and southern corn pone; blanc-manges of all colors and flavors, made from corn-starch, and, to crown all, huge bowls of delicious pop-corn, buttered and sweetened, which no boy or girl can resist.

While we were enjoying the pop-corn Mrs. Parker talked to us about the uses of corn as a food. In order that the things we eat may be of any value to us as food, she explained, they must contain some of the following substances: carbohydrates, protein, fat, mineral matter (or ash), and water. Carbohydrates are contained in such substances as sugar and starch; and both carbohydrates and fat supply heat and energy to the body. Protein,

which forms a large part of meat, eggs, and cheese, repairs the waste and helps to build up the working parts of the body. Mineral matter is necessary for the growth of the bones.

Corn is composed of:

Carbohydrates	72.6 per cent.
Protein	10.3 per cent.
Fat (oil)	5.0 per cent.
Mineral matter (ash)	1.5 per cent.
Water	10.6 per cent.
	100.0 per cent.

For growing animals, such as young pigs, and for animals which are required to work, such as horses, more protein and mineral matter are needed than they can get from corn alone; but corn is the chief food upon which we depend for fattening hogs and cattle; and corn fodder from the silo is one of the best foods for dairy cattle. For the farmer himself, corn meal is an excellent food, especially if used with other foods, such as cream and butter.

One of the results of this meeting was a large increase in the membership of the club; for, of course, all the boys and girls whom Mrs. Parker had invited wished to join; and before we left for home that evening it was agreed that we should ask Miss Stuart to allow us to hold our next meeting at the school, so that all the boys and girls in the district who wished to do so might have an opportunity to become members.

(*To be continued.*)

Begin the study of trees in winter.

THE TREES ON THE FARM

The best time to begin the study of trees is in winter, for when they are bare of leaves it is much easier to get an idea of their general size and form. On this winter afternoon, then, let us take a walk across the fields and through the woods where we are likely to meet some of the trees that are commonly found on the farm.

On this particular farm the owner has left one or two trees standing in his fields, partly, no doubt, because they give shade to his horses and cattle in summer, and partly because the trees in themselves are very beautiful. The tree which you see at the far end of this field is an American elm. You know it at once by its general umbrella or parasol shape; for the trunk is tall and bare, and the branches run upward with the trunk and then, spreading out like a fan, fall in a graceful droop like the circle of spray from a playing fountain. Is it any wonder that

the raccoon and the black squirrel are fond of the elm, whose lofty trunk affords them a safe retreat, and that the oriole hangs its woven basket in safety from the pendent boughs? The orioles seldom build in the country; but in the town or city where you have a graceful elm drooping over the shady street, look, on the next day that you are passing, and see if there are not, swinging from its lowest boughs, the remnants of two or three old oriole nests, and perhaps, also, the little shallow basket of the warbling vireo, whom the boys call the weaver-bird.

Aside from its general shape and flaky bark there is not much to be learned of the elm in winter, but if I could bring you back in the spring, in March or April, even before the leaves were out, you might see the tree covered with the delicate reddish flowers upon which the red squirrel feasts; and later, in May, you would find the ground carpeted with the little round seeds, which are carried lightly away by the wind and water to sprout and flourish, it may be, by the margins of far-away streams.

When we cross into the next field we come to a stretch of rising ground, and half-way up the slope there stands a "hard" or "sugar" maple. This tree prefers rich and dry soil, while its two not less beautiful cousins, the red and the silver maples, commonly called "soft" maples, favor the moist pasture-land in the valley below. In the winter it is difficult to distinguish the hard maple from the soft, but the hard maple is known in general by its larger size, its more rugged appearance, its more rounded and symmetrical shape, and its light-colored bark. The branches of the soft red maple are more erect than those of the hard sugar-maple, while, on the other

The maple and elm trees in winter.

hand, the branches of the soft silver maple have a decided droop, which gives it a delicate, graceful appearance. The bark of both the soft maples is of a darker shade than that of the hard maples, and a soft maple may often be distinguished by its reddish-brown color.

In the summer, when the leaves are on the trees, it is an easy matter to tell the different kinds of maples apart, and in winter the dead leaves on the ground will help you to identify the trees. You will notice that the leaves of the sugar-maple are larger and that they have not the finely toothed notches which the soft maples have. The leaf of the soft silver maple is not only finely toothed, but its five lobes are separated by very deep and sharp indentations. These distinctions are very simple.

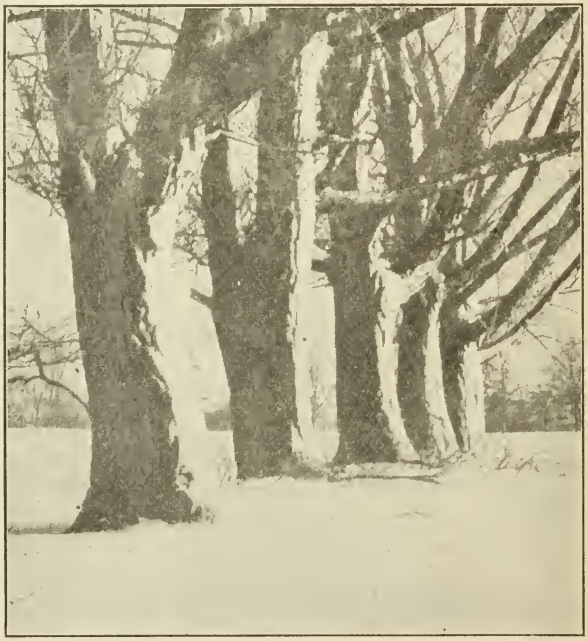
Moreover, in the spring-time both the soft maples flower earlier than the sugar-maple, and the ground is covered with their seeds in May and June; whereas the hard maple does not bear its seeds, or samaras, till the fall. The soft red maple is, of course, the tree whose leaves change to such gorgeous hues of red in the autumn, while the leaves of the hard maple turn not to red but to a clear and brilliant yellow.

At the top of the slope we climb the old rail fence, and cross into the wood which covers the hillside beyond. Not far from the foot of the hill is a beautiful beech tree. There is no possibility of mistaking a beech for any other tree, for its smooth and beautifully mottled bark and its thick, bunchy, irregular branches mark it out at once from all others. "The Painted Beech," artists have called it—a beautiful name, applied to a not less beautiful tree. I have always been fond of the beech, not only for its

beauty, but on account, too, of the company of animals and birds that its bountiful supply of fruit attracts. In the summer it is the nesting-place of the red-eyed vireo—the "preacher"—of the rose-breasted grosbeak, and of the scarlet tanagers, which look like flames of living fire. In the autumn the blue-jay and the red squirrel quarrel in the beech top, while the chipmunk and the little deer-mouse lay up their winter supply from the stores at its feet. And in the cold October nights, when the leaves have fallen, last, but not least, comes the raccoon to feast upon the beech harvest that lies buried among the fallen leaves; for, alas! the bark is too smooth for this black-faced, ring-tailed rascal to climb without danger, and he is forced to content himself with what has fallen below.

Half-way up the hill is a basswood, or linden, which the boys love for its soft, light wood, and which the wasps and bees love still better for its store of honeyed sweets. I remember seeing a beautiful specimen on one occasion in a secluded bit of woodland, in late June, when it was in full bloom. The air was heavy with its perfume, and the buzz and hum of insects in countless numbers filled the quiet woodland with a droning music, not unsuited to the warmth and drowsiness of a summer afternoon. The flowers of the basswood grow from a special little leaf or bract, which is a lighter green than the tree and gives it a peculiar variegated appearance. How cool and inviting in summer are its large, rounded, palm-like leaves! But on this winter afternoon nothing remains but the smooth graceful trunk and limbs and tapering crown to remind me that there are, after all, other types of beauty than the dense and round-topped beech.

As I reach the crest of the hill I find, standing on its very brow, a hardy, gnarled red oak. There is something in the gnarled appearance of the oak as seen from a distance that proclaims its identity without closer acquain-



A row of willows.

tance; and the only question that ever presents itself is, what *kind* of oak is it? The white and the red are the most common, and both grow in rich, dry soil; but the red is taller, darker, and more compact than the white. Its leaves, moreover, have always thorny points, while

those of the white oak are smooth. And if all other tests fail, a taste of the acorn will be sure to convince, for that of the red is bitter, while the acorn of the white is sweet and edible.

In order to reach the road by which we may return home we must go down the opposite slope and cross the valley, through which runs a good-sized creek. At a bend in the creek, close to the fallen tree by which I cross, there stands a group of weeping willows. The willows are not half so beautiful in winter as in summer, and as there are about one hundred and fifty varieties, it requires an expert to classify them. Most of the small willows are native, but the larger species have been introduced from Europe and the East. The weeping willow is one of these introduced varieties, and is a genuine willow of the East. It is called the weeping willow not only because its branches droop, but because of its association with the sorrows of the children of Israel in their captivity.

"*By the rivers of Babylon, there we sat down, yea, we wept, when we remembered Zion. We hanged our harps upon the willows in the midst thereof.*"

It was a strange accident, too, that brought this beautiful Eastern tree into Europe and America for the first time. Less than two hundred years ago the poet Pope received a present of figs from Smyrna in Asia Minor, embedded in which was a small twig. Pope's curiosity was aroused, and he planted it. It grew and flourished, and became the ancestor of all the weeping willows in the Western world.

Quite in contrast to the willow with its lithe and yet brittle twigs, is the trim little tree that I meet with at the

edge of the fringe of wood as I cross the river valley on my return home. It is the hornbeam, or water-beech, which every country boy knows by the familiar name of ironwood. It is a small tree, scarcely a foot in diameter, and of slow growth; but, small as it is, I remember having with this very tree one of those experiences which a boy never forgets. Coming along the edge of this little wood about dusk one summer evening, I saw a raccoon disappear into a hole at the bottom of the little ironwood. The hole was not large, but large enough for a raccoon to squeeze into. I probed it with a stick. The tree was hollow for about four feet up, and the raccoon was at the top of the cavity. Every time I poked him with the stick he growled, but no amount of prodding would induce him to come down. I lit a fire at the mouth of the hole, but the smoke appeared only to have a soothing effect. I hammered on the tree, but nothing could dislodge him; and finally in the darkness I blocked up the mouth of the hole with a heavy stone and came away. In the morning the stone was still there, but my prison-house was empty. The prisoner had dug a hole under the roots of the tree on the other side and escaped. But from that time forward the little ironwood had a particular interest for me.

Do not rob or mar the tree unless you really need what it has to give you. Let it stand and grow in virgin majesty, ungirdled and unscarred, while the trunk becomes a firm pillar of the forest temple, and the branches spread abroad a refuge of bright green leaves for the birds of the air.

HENRY VAN DYKE.

Meanwhile we did our nightly chores—
Brought in the wood from out of doors,
Littered the stalls, and from the mows
Raked down the herd's grass for the cows:
Heard the horse whinnying for his corn;
And, sharply clashing horn on horn,
Impatient down the stanchion rows
The cattle shake their walnut bows:
While, peering from his early perch
Upon the scaffold's pole of birch,
The cock his crested helmet bent
And down his querulous challenge sent.

Unwarmed by any sunset light
The gray day darkened into night,
A night made hoary with the swarm
And whirl-dance of the blinding storm,
As zigzag wavering to and fro
Crossed and recrossed the wingèd snow:
And ere the early bed-time came
The white drift piled the window-frame,
And through the glass the clothes-line posts
Looked in like tall and sheeted ghosts.
So all night long the storm roared on:
The morning broke without a sun;
In starry flake, and pellicle,
All day the hoary meteor fell;

And, when the second morning shone,
We looked upon a world unknown,
On nothing we could call our own.
Around the glistening wonder bent
The blue walls of the firmament,
No cloud above, no earth below—
A universe of sky and snow!
The old familiar sights of ours
Took marvellous shapes; strange domes and towers
Rose up where sty or corn-crib stood,
Or garden wall, or belt of wood;
A smooth white mound the brush pile showed,
A fenceless drift what once was road;
The bridle-post an old man sat
With loose-flung coat and high cocked hat;
The well-curb had a Chinese roof;
And even the long sweep, high aloof,
In its slant splendor, seemed to tell
Of Pisa's leaning miracle.

A prompt, decisive man, no breath
Our father wasted: "Boys, a path!"
Well pleased (for when did farmer boy
Count such a summons less than joy?)
Our buskins on our feet we drew;
With mittened hands, and caps drawn low,
To guard our necks and ears from snow,
We cut the solid whiteness through.
And, where the drift was deepest, made
A tunnel walled and overlaid
With dazzling crystal: we had read

Of rare Aladdin's wondrous cave,
And to our own his name we gave,
With many a wish the luck were ours
To test his lamp's supernal powers.
We reached the barn with merry din
And roused the prisoned brutes within.
The old horse thrust his long head out,
And grave with wonder gazed about;
The cock his lusty greeting said,
And forth his speckled harem led;
The oxen lashed their tails, and hooked,
And mild reproach of hunger looked.

All day the gusty north wind bore
The loosening drift its breath before;
Low circling round its southern zone,
The sun through dazzling snow-mist shone.
No church bell lent its Christian tone
To the savage air, no social smoke
Curled over woods of snow-hung oak.

As night drew on, and, from the crest
Of wooded knolls that ridged the west,
The sun, a snow-blown traveller, sank
From sight beneath the smothering bank,
We piled, with care, our nightly stack
Of wood against the chimney-back—
The oaken log, green, huge, and thick,
And on its top the stout back-stick;
The knotty forestick laid apart,
And filled between with curious art

The ragged brush; then, hovering near,
We watched the first red blaze appear,
Heard the sharp crackle, caught the gleam
On whitewashed wall and sagging beam,
Until the old, rude-furnished room
Burst, flower-like, into rosy bloom;
While radiant with a mimic flame
Outside the sparkling drift became,
And through the bare-boughed lilac tree
Our own warm hearth seemed blazing free.

Shut in from all the world without,
We sat the clean-winged hearth about,
Content to let the north wind roar
In baffled rage at pane and door,
While the red logs before us beat
The frost-line back with tropic heat;
And ever, when a louder blast
Shook beam and rafter as it passed,
The merrier up its roaring draught
The great throat of the chimney laughed;
The house-dog on his paws outspread,
Laid to the fire his drowsy head,
The cat's dark silhouette on the wall
A couchant tiger's seemed to fall;
And, for the winter fireside meet,
Between the andiron's straddling feet,
The mug of cider simmered slow,
The apples sputtered in a row,
And, close at hand, the basket stood
With nuts from brown October's wood.

What matter how the night behaved?
What matter how the north wind raved?
Blow high, blow low, not all its snow
Could quench our hearth-fire's ruddy glow.

JOHN GREENLEAF WHITTIER.

The whirl-dance of the blinding storm.

Breaking out the road.

A VISIT TO THE FARM

"There's our bells," cried Thomas Finch, as the deep, musical boom of the Finches' sleigh-bells came through the bush. "Come on, Hughie, we'll get them at the cross." And, followed by Hughie and the boys from the north, he set off for the north cross-roads where they would meet the Finches' bob-sleighs coming empty from the saw-mill, to the great surprise and unalloyed delight of Mr. and Mrs. Bushy, who, from their crotch in the old beech, had watched with some anxiety the boys' unusual conduct.

"There they are, Hughie," called Thomas, as the sleighs came out into the open at the cross-roads. "They'll wait for us. They know you're coming," he yelled encouragingly; for the big boys had left the smaller ones, a panting train, far in the rear, and were piling themselves upon the Finches' sleighs with never a "by your leave" to William John—familiarly known as Billy Jack—Thomas's eldest brother, who drove the Finches' team.

Thomas's home lay a mile north and another east from the Twentieth cross-roads; but the winter road by which they hauled sawlogs to the mill cut right through the forest, where the deep snow packed hard into a smooth track, covering roots and logs and mud-holes, and making a perfect surface for the sleighs, however heavily loaded, except where here and there the pitch-holes, or *cahots*, came. These cahots, by the way, though they became, especially toward the spring, a serious annoyance to teamsters, only added another to the delights that a sleigh-ride held for the boys.

To Hughie the ride this evening was blissful to an unspeakable degree. He was overflowing with new sensations. He was going to spend the night with Thomas, for one thing, and Thomas as his host was quite a new and different person from the Thomas of the school. The minister's wife, ever since the examination day, had taken a deeper interest in Thomas, and determined that something should be made out of the solemn, solid, slow-moving boy. Partly for this reason she had yielded to Hughie's eager pleading, backing up the invitation brought by Thomas himself, and delivered in an agony of red-faced confusion, that Hughie should be allowed to go home with him for the night. Partly, too, because she was glad that Hughie should see something of the Finches' home, and especially of the dark-faced, dark-eyed little woman who so silently and unobtrusively, but so efficiently, administered her home, her family, and their affairs, and especially her husband, without suspicion on his part that anything of the kind was being done.

In addition to the joy that Hughie had in Thomas in

his new rôle as host, this winter road was full of wonder and delight, as were all roads and paths that wound right through the heart of the bush. The regular made-up roads, with the forest cut back beyond the ditches at the sides, were a great weariness to Hughie, except, indeed, in the spring-time, when these ditches were running full with sunlit water over the mottled clay bottom and gravelly ripples. But the bush roads and paths, summer and winter, were filled with things of wonder and of beauty, and this particular winter road of the Finches' was best of all to Hughie, for it was quite new to him, and, besides, it led right through the mysterious big cedar swamp and over the butternut ridge, beyond which lay the Finches' farm. Balsam trees, tamarack, spruce, and cedar made up the thick underbrush of the big swamp; white birch, white ash, and black were thickly sprinkled through it; but high above these lesser trees towered the white pines, lifting their great, tufted crests in lonely grandeur, seeming like kings among meaner men. Here and there the rabbit runways, packed into hard little paths, crossed the road and disappeared under the thick spruces and balsams; here and there the sly single track of the fox, or the deep hoof-mark of the deer, led off into unknown depths on either side. Hughie, sitting up on the bolster of the front bob beside Billy Jack, for even the big boys recognized his right, as Thomas's guest, to that coveted place, listened with eager face and wide-open eyes to Billy Jack's remarks upon the forest and its strange people.

One thing else added to Hughie's keen enjoyment of the ride. Billy Jack's bays were always in the finest of fettle, and pulled hard on the lines, and were rarely allowed the

rapture of a gallop. But when the swamp was passed and the road came to the more open butternut ridge, Billy Jack shook the lines over their backs and let them out. Their response was superb to witness, and brought Hughie some moments of ecstatic rapture. Along the hard-packed road that wound about among the big butternuts the rangy bays sped at a flat gallop, bounding clear over the cahots, the booming of the bells and the rattling of the chains furnishing an exhilarating accompaniment to the swift, swaying motion, while the children clung for dear life to the bob-sleighs and to each other. It was all Billy Jack could do to get his team down to a trot by the time they reached the clearing, for there the going was perilous, and, besides, it was just as well that his father should not witness any signs on Billy Jack's part of the folly that he was inclined to attribute to the rising generation. So steadily enough the bays trotted up the lane and between long lines of green cordwood on one side, and a haystack on the other, into the yard and, swinging round the big straw-stack that faced the open shed and was flanked on the right by the cow-stable and hog-pen and on the left by the horse-stable, came to a full stop at their own stable door.

"Thomas, you take Hughie into the house to get warm, till I unhitch," said Billy Jack, with the feeling that courtesy to the minister's son demanded this attention. But Hughie, rejecting this proposition with scorn, pushed Thomas aside and set himself to unhitch the S-hook on the outside trace of the nigh bay. It was one of Hughie's grievances, and a very sore point with him, that his father's people would insist on treating him in the privileged

manner they thought proper to his father's son, and his chief ambition was to stand upon his own legs and to fare like other boys. So he scorned Billy Jack's suggestion, and while some of the children scurried about the stacks for a little romp before setting off for their homes, which some of them for the sake of the ride had left far behind, Hughie devoted himself to the unhitching of the team with Billy Jack. And so quick was he in his movements and so fearless of the horses, that he had his side unhitched and was struggling with the breast-strap before Billy Jack had finished with his horse.

"Man! you're a regular farmer," said Billy Jack admiringly, "only you're too quick for the rest of us."

Hughie, still struggling with the breast-strap, found his heart swell with pride. To be a farmer was his present dream.

"But that's too heavy for you," continued Billy Jack. "Here, let down the tongue first."

"Pshaw!" said Hughie, disgusted at his exhibition of ignorance; "I knew that tongue ought to come out first, but I forgot."

"Oh, well, it's just as good that way, but not quite so easy," said Billy Jack with doubtful consistency.

It took Hughie but a few minutes after the tongue was let down to unfasten his end of the neck-yoke and the cross-lines, and he was beginning at his hame-strap, always a difficult buckle, when Billy Jack called out: "Hold on there! You're too quick for me. We'll make them carry their own harness into the stable. Don't believe in making a horse of myself." Billy Jack was something of a humorist.

The Finch homestead was a model of finished neatness. Order was its law. Outside, the stables, barns, stacks, the very wood-piles evidenced that law. Within, the house and its belongings and affairs were perfect in their harmonious arrangement. The whole establishment, without and within, gave token of the unremitting care of one organizing mind, for, from dark to dark, while others might have their moments of rest and careless ease, "the little mother," as Billy Jack called her, was ever on guard, and all the machinery of house and farm moved smoothly and to purpose because of that unsleeping care. She was last to bed and first to stir, and Billy Jack declared that she used to put the cats to sleep at night and waken up the roosters in the morning. And through it all her face remained serene, and her voice flowed in quiet tones.

Besides the law of order another law ruled in the Finch household—the law of work. The days were filled with work, for they each had their share to do and bore the sole responsibility for its being well done. If the cows failed in their milk, or the fat cattle were not up to the mark, the father felt the reproach as his; to Billy Jack fell the care and handling of the horses; Thomas took charge of the pigs and the getting of wood and water for the house; little Jessac had her daily task of "sorting the rooms," and when the days were too stormy or the snow too deep for school she had in addition her stint of knitting or of winding the yarn for the weaver. To the mother fell all the rest. At the cooking and the cleaning, and the making and mending, all fine arts with her, she diligently toiled from long before dawn till after all the rest were

abed. But besides these and other daily household duties, there were, in their various seasons, the jam and jelly, the pumpkin and squash preserves, the butter-making and cheese-making, and, more than all, the long, long work with the wool. Billy Jack used to say that the little mother followed that wool from the backs of her sheep to the backs of her family, and hated to let the weaver have his turn at it.

But, though Hughie, of course, knew nothing of this toiling and moiling, he was distinctly conscious of an air of tidiness and comfort and quiet, and was keenly alive to the fact that there was a splendid supper waiting him when he got in from the stables with the others—"hungry as a wildcat," as Billy Jack expressed it. And that *was* a supper! Fried ribs of fresh pork, and hashed potatoes, hot and brown, followed by buckwheat pancakes, hot and brown, with maple syrup. There was tea for the father and mother with their oat-cakes, but for the children no such luxury, only the choice of buttermilk or sweet milk. Hughie, it is true, was offered tea, but he promptly declined; for, though he loved it well enough, it was sufficient reason for him that Thomas had none. It took, however, all the grace out of his declining that Mr. Finch remarked in gruff pleasantry: "What would a boy want with tea!" The supper was a very solemn meal. They were all too busy to talk, at least so Hughie felt, and as for himself he was only afraid lest the others should "push back" before he had satisfied the terrible craving within him.

Before bed-time Billy Jack took down the tin lantern, pierced with holes into curious patterns, through which the candle-light rayed forth, and went out to bed the horses.

In spite of protests from all the family, Hughie set forth with him, carrying the lantern and feeling very much the farmer, while Billy Jack took two pails of boiled oats and barley, with a mixture of flaxseed, which was supposed to give the Finches' team their famous and superior gloss. When they returned from the stable they found in the kitchen Thomas, who was rubbing a composition of tallow and beeswax into his boots to make them waterproof, and the mother, who was going about setting the table for the breakfast.

"Too bad you have to go to bed, mother," said Billy Jack, struggling with his bootjack. "You might just go on getting the breakfast, and what a fine start that would give you for the day!"

"You hurry, William John, to bed with that poor lad. What would his mother say? He must be fairly exhausted."

"I'm not a bit tired," said Hughie brightly, his face radiant with the delight of his new experiences.

"You will need all your sleep, my boy," said the mother kindly, "for we rise early here. But," she added, "you will lie till the boys are through with their work and Thomas will waken you for your breakfast."

"Indeed, no! I'm going to get up," announced Hughie.

It seemed to Hughie that he had hardly dropped off to sleep when he was awake again to see Thomas standing beside him with a candle in his hand, announcing that breakfast was ready.

"Have you been out to the stable?" he eagerly inquired, and Thomas nodded. In great disappointment and a little shamefacedly he made his appearance at the breakfast-table.

The winter road by which they hauled sawlogs to the mill.

It seemed to Hughie as if it must be still the night before, for it was quite dark outside. He had never had breakfast by candle-light before in his life, and he felt as if it all were still a part of his dreams, until he found himself sitting beside Billy Jack on a load of sawlogs, waving good-bye to the group at the door.

As Hughie was saying his good-byes Billy Jack's horses were pawing to be off and rolling their solemn bells, while their breath rose in white clouds above their heads, wreathing their manes in hoary rime.

"Git-ep, lads," said Billy Jack, hauling his lines taut and flourishing his whip. The bays straightened their backs, hung for a few moments on their tugs, for the load had frozen fast during the night, and then moved off at a smart trot, the bells solemnly booming out and the sleighs creaking over the frosty snow.

"Man!" said Hughie enthusiastically. "I wish I could draw logs all winter."

"It's not too bad a job on a day like this," assented Billy Jack. And, indeed, any one might envy him the work on such a morning. Over the tree tops the rays of the sun were beginning to shoot their rosy darts up into the sky, and to flood the clearing with light that sparkled and shimmered upon the frost particles, glittering upon and glorifying snow and trees, and even the stumps and fences. Around the clearing stood the forest, dark and still, except for the frost reports that now and then rang out like pistol shots. To Hughie the early morning invested the forest with a new beauty and a new wonder. The dim light of the dawning day deepened the silence, so that involuntarily he hushed his voice in speaking, and

the deep-toned roll of the sleigh-bells seemed to smite upon that dim, solemn quiet with startling blows. On either side the balsams and spruces, with their mantles of snow, stood like white-swathed sentinels on guard—silent, motionless, alert. Hughie looked to see them move as the team drove past.

As they left the more open butternut ridge and descended into the depths of the big swamp the dim light faded into deeper gloom, and Hughie felt as if he were in church, and an awe gathered upon him.

"It's awful still," he said to Billy Jack in a low tone, and Billy Jack, catching the look in the boy's face, checked the light word upon his lips, and gazed around into the deep forest glooms with new eyes. The mystery and wonder of the forest had never struck him before. It had hitherto been to him a place for hunting or for getting big sawlogs. But to-day he saw it with Hughie's eyes and felt the majesty of its beauty and silence. For a long time they drove without a word.

"Say, it's mighty fine, isn't it?" he said, adopting Hughie's low tone.

"Splendid!" exclaimed Hughie. "My! I could just hug those big trees. They look at me like—like your mother, don't they, or mine?" But this was beyond Billy Jack.

"Like my mother?"

"Yes, you know, quiet and—and—kind, and nice."

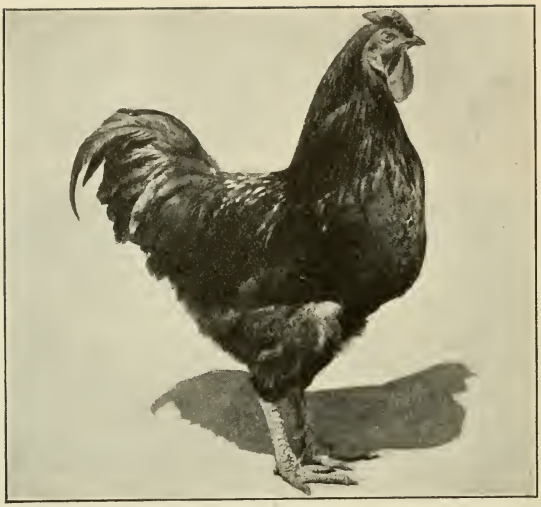
"Yes," said Thomas, breaking in for the first time, "that's just it. They do look, sure enough, like my mother and yours. They have both got that look."

"Git-ep!" said Billy Jack to his team. "These fellows'll

be ketchin' something bad if we don't get into the open soon. Shouldn't wonder if they've got 'em already, making out their mothers like an old white pine. Git-ep, I say!"

RALPH CONNOR.

Among the balsams and spruces.



The Black Minorca rooster.

A BARN-YARD MEETING

Nine o'clock on a snowy winter morning! At farmer Walters' home the path was not yet broken down to the barn, and in the farmhouse itself there were no signs of life. It was plain that the morning chores had not yet been done and the animals had not yet been fed.

But down at the barn-yard there was an unusual stir. The black Minorca rooster, mounted on top of a snow-covered strawstack, was pealing forth a lusty summons:

"A barn-yard meeting h-e-r-e!"

"A barn-yard meeting h-e-r-e!"

And at this clarion call all the doors of the stables, the poultry-house, and the great barn itself began to open up,

and as if by common consent the farmyard animals—horses, cows, pigs, sheep, turkeys, geese, ducks, hens —came trooping forth into the barn-yard to the foot of the strawstack, which was the appointed place of meeting.

"A barn-yard meeting h-e-r-e!"

"A barn-yard meeting h-e-r-e!"

sang chanticleer from the top of the stack, but still there were no signs of stir or life at the farmhouse.

When at last the farm animals were all assembled, the black Minorca came down from his station on the strawstack, and, at a call for silence from the bronze turkey gobbler, every one knew that the meeting was about to open. There was no need to explain why the meeting was called; for these barn-yard gatherings were never held except to discuss farmyard grievances, and it was only a question as to who should begin. But as it was Mrs. Brindle who usually had most to say on these occasions, it was agreed that she should be permitted to speak first. From what Mrs. Brindle had to say it was easy to see that she was in a very cross and ugly mood. She had not been milked the night before, her stall had not been cleaned, and, worse than all, she had not been properly watered and fed.

Mrs. Brindle's speech was interrupted at least half a dozen times by Mrs. Jersey, Mrs. Holstein, and Mrs. Ayrshire, who declared, one and all, that they would go dry if this thing happened many times more.

"I object to these irregular hours for milking, too," continued Mrs. Brindle. "Here it is after nine to-day and I was milked at half past seven yesterday morning.

Why don't they get a time and stick to it? I am sure I should give more milk if they did."

"It's bad enough to have the dog set on you," said Mrs. Ayrshire, "and to be milked by a green farm-hand, but when it comes to being shut up in a dirty stable with no light and no fresh air——"

"They don't give me enough water," interrupted Mrs. Holstein. "I suppose they think I'm made of milk. If things don't change around this farm I *will* go dry."

"Serve 'em right! Serve 'em right!" added Mr. Durham in a deep bass voice. "I want my breakfast."

Mr. Grunter and Mrs. Razorback began to talk at the same time, and it was rather hard to make out what they both had to say, but Mr. Grunter was objecting to his pen not being cleaned, while Mrs. Razorback kept on grumbling about the muddy water that she was given to drink."

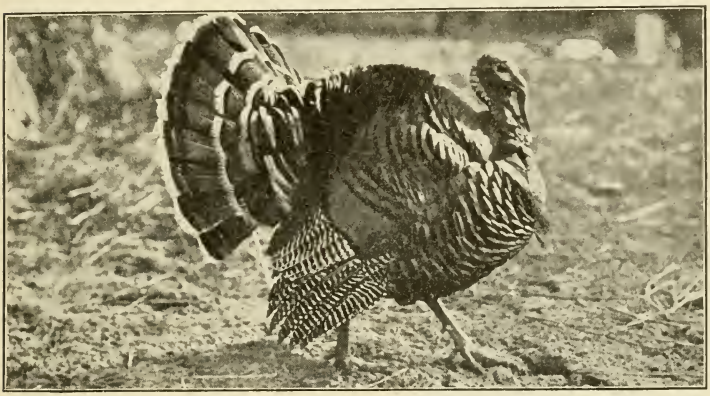
"I'd keep myself clean," said Mr. Grunter, "if only they'd give me a chance. If I only had a clean straw bed you wouldn't catch me out here on a cold morning like this."

At this Mrs. Razorback began to shiver with the cold, and as soon as she could escape observation she withdrew to the shelter of the strawstack and buried herself in the straw.

Mrs. Bay and Mrs. Gray and young Miss Filly were all of the same opinion. No attention, they claimed, was ever given to their comfort or their personal appearance.

"You've only to look at us," complained Miss Filly, "to see how we are treated. My coat hasn't been brushed for the last month. Nobody ever grooms us and no one cares how we look."

"Humph!" interrupted young Mr. Thoroughbred. "That's nothing! How would you like to be left without a blanket, and have a frozen bit put into your mouth,



The bronze turkey gobbler.

and get nothing but ice-water to drink? When I come in from work no one ever gives me a rub-down, and as for oats——"

"Oats!" exclaimed Mrs. Gray and Mrs. Bay and old Mr. Clydesdale in a single breath. "Did you say OATS?"

At this the ducks set up a fearful quacking, for none of them had been fed, until the black Minorca rooster climbed up on the ladder that leaned against the stack, and shouted:

"This will never d-o-o-o!"

"This will never d-o-o-o!"

and order was restored once again.

The bronze turkey gobbler spoke next, but, as usual, he would talk of nothing but the loss of his family last

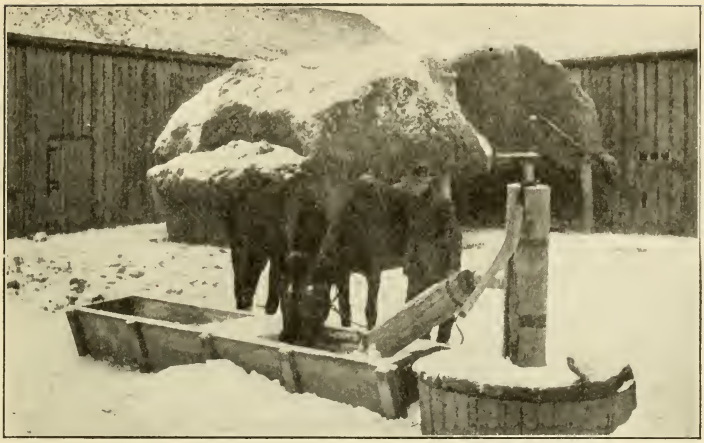
Thanksgiving; at which Mrs. Razorback, who had recently lost her whole family, came out from under the straw and set up such a squealing that not a syllable more of his story could be heard.

Then the black Minorca chickens began to chatter all at once, and from what you could make out of their talk it was all about sunshine, and fresh air, and good nesting-places, and clean perches, and proper food, until, having fairly talked themselves out of breath, the black Minorca rooster declared that none of his family would lay another egg until they were better treated.

Mrs. Jersey.

Just at this moment the kitchen door of the farm-house opened, and the hired man came out to get an armful of wood for kindling. At this all the animals in the barn-yard set up such a lowing and squealing and whinnying and cackling that even the black Minorca could not be heard as he mounted the strawstack once more to declare that the meeting was adjourned.

"Just listen to those animals," said Mrs. Walters as she put up the bed-room blind. "I never heard such a clatter. Whatever can be the matter with them? One would think, to listen to them, that they had *never* been fed!"



Feed me, water, and care for me.

THE HORSE'S PRAYER

To thee, my master, I offer my prayer: Feed me, water, and care for me, and, when the day's work is done, provide me with shelter, a clean, dry bed, and a stall wide enough for me to lie down in comfort.

Always be kind to me. Talk to me. Your voice often means as much to me as the reins. Pet me sometimes, that I may serve you the more gladly and learn to love you. Do not jerk the reins, and do not whip me when going uphill. Never strike, beat, or kick me when I do not understand what you want, but give me a chance to understand you. Watch me, and if I fail to do your bidding, see if something is not wrong with my harness or feet.

Do not check me so that I cannot have the free use of my head. If you insist that I wear blinders, so that I cannot see behind me as it was intended I should, I pray

you be careful that the blinders stand well out from my eyes.

Do not overload me, or hitch me where water will drip on me. Keep me well shod. Examine my teeth when I do not eat, I may have an ulcerated tooth, and that, you know, is very painful. Do not tie my head in an unnatural position, or take away my best defence against flies and mosquitoes by cutting off my tail.

I cannot tell you when I am thirsty, so give me clean, cool water often. Save me, by all means in your power, from that fatal disease—the glanders. I cannot tell you in words when I am sick; so watch me, that by signs you may know my condition. Give me all possible shelter from the hot sun, and put a blanket on me, not when I am working but when I am standing in the cold. Never put a frosty bit in my mouth; first warm it by holding it a moment in your hands.

I try to carry you and your burdens without a murmur, and wait patiently for you long hours of the day or night. Without the power to choose my shoes or path, I sometimes fall on the hard pavements which I have often prayed might not be of wood but of such a nature as to give me a safe and sure footing. Remember that I must be ready at any moment to lose my life in your service.

And, finally, O my master, when my useful strength is gone, do not turn me out to starve or freeze, or sell me to some cruel owner, to be slowly tortured and starved to death; but do thou, my master, take my life in the kindest way, and your God will reward you here and hereafter. You will not consider me irreverent if I ask this in the name of Him who was born in a stable. Amen.

His large stock demand regular attention.

IN PIONEER DAYS

Whatever may be said about the enjoyments of winter life, there are few who really enjoy it so much as the farmer. His cares, however, are very numerous and his work is varied and laborious. His large stock demand regular attention and must be fed morning and night. The grain has to be threshed, for his cattle need the straw, and the grain has to be got out for market. But in the early pioneer days, threshing-machines were unknown. So, day after day, the farmer was forced to hammer away with the flail or spread the grain on the barn floor to be trampled out with horses. His muscular arm was the only machine he had to rely upon; and if it did not accomplish much, it succeeded in doing its work well and provided for all his

modest wants. Then the fanning-mill came into play to clean the grain, after which it was carried to the granary, whence again it was taken either to the mill or to the market.

Winter was also the time to get out the logs from the woods and to haul them to the mill. The sawmill was a small rough structure; and it had but one upright saw, which did not turn out a very large quantity of stuff. Rails also had to be split and drawn to where new fences were wanted or where old ones needed repairs. Flour, beef, mutton, butter, apples, and a score of other things had to be taken to market and disposed of.

Early in the spring, before the snow had gone, the sugar-making time came. Now, too, the hams and beef had to be taken from the casks and hung in the smoke-house. The spring work crowded on rapidly. Ploughing, fencing, sowing, and planting followed in quick succession. All hands were busy. The younger children had to drive the cows to pasture in the morning and bring them up at night. They had also to take a hand at the old churn; and it was a weary task, as I remember well, to stand for an hour perhaps and drive the dasher up and down through the thick cream. How often the handle was examined to see if there were any indications of butter, and what satisfaction there was in getting over with it!

As soon as my legs were long enough I had to follow a team; and I was mounted on the back of one of the horses when my nether limbs were hardly sufficient in length to hold me to my seat. The implements then in use were very rough. Iron ploughs were generally used; and when compared with the ploughs of to-day they were clumsy

things. They had but one handle, but, though difficult to guide, were a great advance over the old wooden plough, which had not yet altogether gone out of use. Tree tops were frequently used for drags. Riding a horse in the field, as I frequently had to do under a hot sun, was not so agreeable as it might seem.

In June came sheep-washing. The sheep were driven to the bay shore and secured in a pen. Then one by one they were taken into the bay and their fleeces were carefully washed. In a few days they were brought to the barn and sheared. The wool was then sorted; some of it was retained to be carded by hand, and the remainder was sent to the mill to be turned into rolls; and when they were brought home the hum of the spinning-wheel was heard day after day for weeks. Of course, the quality of the cloth depended upon the fineness and evenness of the thread, and a great deal of pains was taken to turn out good work. When the spinning was done, the yarn was taken away to the weaver to be made into cloth.

Early in July the haying began. The mowers were expected to be in the meadow by sunrise. All through the day the rasp of their whetstones could be heard; and as they went swinging across the field, the waving grass fell rapidly before their keen blades and dropped in swaths at their side. The days were not then divided off into a stated number of working hours. The rule was to commence with the morning light and continue as long as one could see. No sound was more welcome than the blast of the old tin dinner-horn. Even Old Gray, when I followed the plough, used to give answer to the cheerful wind of the horn by a loud whinny, and stop in the furrow, as if to

say: "There, now, off with my harness and let us to dinner." If I happened to be in the middle of the field I had considerable trouble to get the old fellow to go on to the end.

As soon as the sun was well up, we followed up the swaths and spread them out nicely with a fork or a long stick so that the grass would dry. In the afternoon it had to be raked up into windrows, work in which the girls often joined us; and after tea one or two of the men cocked it up, while we raked the ground clean after them. If the weather was clear and dry, the hay was sometimes left out for several days before it was drawn into the barn to be stacked.

Another important matter was the preparation of the summer fallow for fall wheat. The ground was first broken up after the spring sowing was over; about hay time the second ploughing had to be done to destroy weeds and get the land into proper order; in August the last ploughing came; and about the 1st of September the wheat was sown. It almost always happened, too, that there were some acres of woodland which had to be cleaned up. Logs and brush were collected into piles and burned. Then the timber was cut down and ruthlessly given over to the fire. When logging-bees were held, the neighbors turned out with their oxen and logging chains and, amid the ring of the axe, the shouting of drivers, and the noise of the men with their handspikes, the great logs were rolled up, one upon another, and left for the fire to eat them out of the way.

In August the wheat-fields were ready for the reapers. A good cradler would cut about five acres a day, and an

expert with the rake would follow and bind up what he cut. There were men who would literally walk through the grain with a cradle, and then two were required to follow. After the wheat was cut, the younger members of the family came in for their share of work both in shocking and in hauling in the grain, and again the girls often gave a helping hand both in the field and in the barn.

In all these tasks good work was expected. My father was a pushing man and thorough in all he undertook. His motto was, "Anything that is worth doing, is worth doing well," and this rule was always enforced. The ploughmen had to throw their furrows neat and straight. When I got to be a strong lad I could strike a furrow across a field as straight as an arrow, and took pride in throwing my furrows in uniform precision. The mowers had to shear the land close and smooth. The rakers threw their windrows straight, and the men placed their haycocks at equal distances; and so in the grain-field the stubble had to be cut clean and even and the sheaves shocked in straight rows, with ten sheaves to the shock. It was really a pleasure to inspect his fields when the work was done.

CANNIFF HAIGHT (ADAPTED).

Thank God every morning when you get up that you have something to do that day which must be done, whether you like it or not. Being forced to work and forced to do your best will breed in you temperance and self-control, diligence and strength of will, cheerfulness and content, and a hundred virtues which the idle will never know.

CHARLES KINGSLEY.

THE CAMPAIGN

(CONTINUED)

During the winter months the besieging armies were forced to take shelter in their intrenchments, and very little fighting took place. Dick wished to carry on a campaign against the house-sparrows, but General Ben did not think it wise to use firearms within the grounds of the fort.

"The army of sparrows," he argued, "are not so dangerous as some of our other enemies, and perhaps when the spring comes we can hold them in check by destroying their shelters wherever we find them. Besides," he added, "General Screech-Owl is one of the best of our allies, and I think that for this winter, at least, perhaps we had better leave the sparrows to him."

"But," urged Milton, "the worst of it is that when the spring comes and we want to fight the weeds and insects, this army of sparrows will keep some of our best allies, such as the wrens and the bluebirds, from helping us. Is there no way for us to get rid of them?"

"If they trouble us too much," replied General Ben, "about the only thing for us to do is to try to get the soldiers in all the other forts in the country to join with us and try to destroy them all. If they trouble our allies too much in the spring, perhaps we shall do that next winter."

During the winter Nora took pains to find out all she could about the army of house-flies, and early in the spring, before the advance guard of the enemy had arrived, the season's campaign had already been carefully planned.

From the figures which Nora supplied, General Ben had the boys make a calculation to show the natural increase in the numbers of the enemy during a single season; and they were greatly surprised to learn that a single female fly who hatches out a first brood early in the season has at least twenty-five million descendants in the course of the year.

"Better begin early," said General Ben. "For every one of the enemy that escapes you now means millions later on. And remember that every one of General House-Fly's soldiers carries about upon his body thousands of poisonous germs which are almost sure to take disease into every farm camp that they enter. House-flies have been known to carry the germs of cholera, tuberculosis, typhoid fever, and other diseases."

And so, with the first appearance of the enemy in the warm days of early spring the campaign was begun. Within the fort itself Lieutenant Dick and Major Milton proved to be excellent "snipers," and whenever one of the enemy came out into the open he fell a victim to the "swatter," which was the newest form of weapon purchased by General Ben on his last visit to town. In addition to this, General Ben supplied a complete range of fine-wire defences to cover the loopholes in the walls, and later in the season sticky-paper entanglements were prepared, in order to capture any of the invaders who might succeed in creeping in past the outer guards of the fort.

But much more important than any of these measures were the means which General Ben took to prevent the enemy from raising new troops and bringing forward fresh reinforcements.

"The armies of General House-Fly," he explained, "feed upon refuse of all kinds, and every few days a fresh army is hatched forth from the waste material which is thrown out from the barn-yard forts. Where there are no forts and no refuse there are none of the enemy to be found. General Dirt is the greatest ally that General House-Fly has."

And so throughout the spring and summer under the direction of General Ben the campaign was carried forward in both offensive and defensive form. The enemy was destroyed by every means possible, both within and without the fort. Dirt and refuse was not allowed to collect around the doorways. Covered cans were provided for garbage; the barn-yard forts were kept scrupulously clean; and at General Ben's suggestion a shed was constructed in which manure and other waste material from the barn-yard was kept, carefully screened in, until it could be hauled away.

It would be too much to expect that in a campaign such as this, against an enemy that counted its fighters literally by millions, not one of the enemy should escape; and in spite of the patience and diligence of General Ben and his allies, the farm forts were never wholly free from attack. But Nora proudly boasted that not a single fly was allowed to remain in her part of the camp to poison the officers' food supplies; and General Ben and the boys had the satisfaction of knowing that in the barn-yard and outlying grounds of the forts, neither themselves nor the animals of the farm were subjected to the same annoyance as in former years.

SPRING

A SONG OF SPRING

Bless the Lord, O my soul. O Lord my God, thou art very great; thou art clothed with honor and majesty.

Who coverest thyself with light as with a garment: who stretchest out the heavens like a curtain;

Who layeth the beams of his chambers in the waters: who maketh the clouds his chariot: who walketh upon the wings of the wind. . . .

He sendeth the springs into the valleys, which run among the hills.

They give drink to every beast of the field: the wild asses quench their thirst.

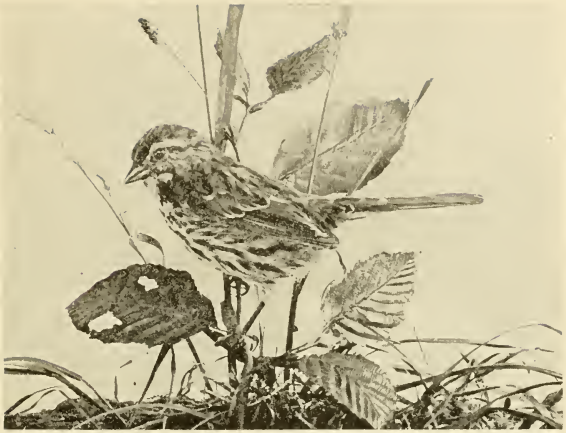
By them shall the fowls of the heaven have their habitation, which sing among the branches.

He watereth the hills from his chambers: the earth is satisfied with the fruit of thy works.

He causeth the grass to grow for the cattle, and herb for the service of man: that he may bring forth food out of the earth. . . .

O Lord, how manifold are thy works! In wisdom hast thou made them all: the earth is full of thy riches.

Psalm 104.



The song-sparrow.

THE SONG-SPARROW

There is a bird I know so well,
  It seems as if he must have sung
  Beside my crib when I was young;
Before I knew the way to spell
  The name of even the smallest bird,
  His gentle, joyful song I heard.
Now see if you can tell, my dear,
What bird it is that, every year,
Sings "Sweet—sweet—sweet—
        Very merry cheer."

He comes in March, when winds are strong,
  And snow returns to hide the earth;

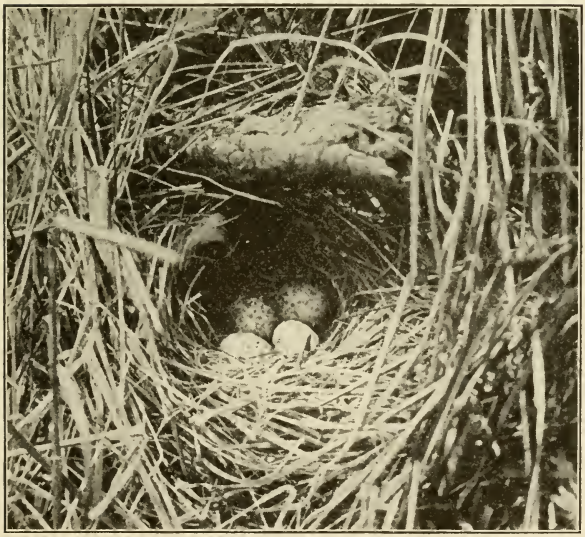
But still he warms his heart with mirth,
And waits for May. He lingers long
While flowers fade; and every day
Repeats his small, contented lay;
As if to say, we need not fear
The seasons' change if love is here,
With "Sweet—sweet—sweet—
Very merry cheer."

He does not wear a Joseph's coat
Of many colors, smart and gay;
His suit is Quaker brown and gray,
With three dark patches at the throat.
And yet, of all the well-dressed throng,
Not one can sing so brave a song;
It makes the pride of looks appear
A vain and foolish thing, to hear
His "Sweet—sweet—sweet—
Very merry cheer."

A lofty place he does not love,
But sits by choice, and well at ease,
In hedges, and in little trees
That stretch their slender arms above
The meadow-brook; and there he sings
Till all the field with pleasure rings;
And so he tells in every ear,
That lowly homes to heaven are near,
In "Sweet—sweet—sweet—
Very merry cheer."

I like the tune, I like the words;
They seem so true, so free from art,
So friendly, and so full of heart,
That if but one of all the birds
Could be my comrade everywhere—
My little brother of the air—
I'd choose the Song-Sparrow, my dear,
Because he'd bless me every year,
With "Sweet—sweet—sweet—
Very merry cheer."

HENRY VAN DYKE.



Nest of song-sparrow.

Open ditch to take off surplus water.

A WET FIELD

Perhaps on your way to school you may have to pass a field which is very wet in spring. The farmer does not usually get to work on this field until late, when most of the seeding on other farms is done; and even then he cannot work the soil properly because it is too wet. But a few weeks of dry weather come, and he gets his crop in at last. But it does not grow well, for the ground is still

so wet that the air can not get at the roots; and besides this, the soil is cold and perhaps a little sour. Water does not heat nearly so quickly as air, and before the soil can become warm the water must be drained off and the surface of the ground must be broken up, so that the air may be able to penetrate the soil.

But even if the crop in this particular field does get a good start in spring, it is likely to suffer from the dry weather later in the summer. Just because the ground is wet in the spring, the roots have not had to go very far into the soil in search of water, and when the ground dries up in midsummer the roots at the surface are left without any moisture. If the ground had been dry in early spring the roots would have gone deep and would have had a good supply of moisture throughout the summer.

There are two ways in which water may be drained off wet fields: either by open ditches or by tile-drains. Sometimes the open ditch is sufficient to take off all the surplus water, but the tile-drain is usually better. The tiles are placed from three to four feet below the surface, and the drains are laid from four to eight rods apart, according to the nature of the soil. But the size of the tile, the depth at which it is laid, and the number of drains that are put down depend altogether on the kind of field that is to be drained.

The skunk-cabbage is out very early.

THE EARLY SPRING WILD FLOWERS

There is a certain wooded hillside which I like to visit in early spring; for, as it faces the south, it gets the first bright rays of spring sunshine and the first warm April rains, so that the flowers seem to bloom here a little sooner than almost anywhere else.

It is high and dry for the most part, but in a dip in the centre there are a number of springs, and at this point for a short distance the undergrowth is thick and the ground is wet and marshy. Along the edge of this marshy spot, even before the snow and ice have disappeared, I am sure to find the first skunk-cabbages of the season pushing through the frosty ground, and a few weeks later the swampy hillside is yellow with a profusion of marsh-marigolds. Then I know it is time to look for the hepatica and the anemone and the spring-beauty on the dryer slopes of the hill, and that somewhere in the moist and sheltered hollows I may find the trillium and the bloodroot and the pretty little harbinger-of-spring.

Our first expedition in the spring, in early March, is in search of the skunk-cabbage, which has already pushed its way through the wet, frosty ground. There are no leaves as yet—only the tough, reddish, fleshy-looking cup, which is called a "spathe" and contains the flowers and protects them from the frost and cold. If you should venture to examine one of these spathes you would find the flowers inside to be very small and not especially interesting. But the spathe itself is attractive, for, coarse as it is, it has beautiful veinings of red, not to speak of its strong, "skunky" smell, which no boy, after all, really dislikes. Both the red color and the strong, pungent odor help to attract the black meat-flies that carry the pollen from flower to flower. It is in the early spring that the skunk-cabbage appears to the best advantage; later in the season its leaves are large and conspicuous, but not especially attractive; and in the autumn, if you care to pick your way through the marsh to examine the cabbage itself, you will find it to be a piece of slimy, disagreeable pulp, with the coarse, round seeds curiously imbedded in its fleshy sides.

Marsh-marigold.

The skunk-cabbage is out very early; but it is generally the latter part of April before

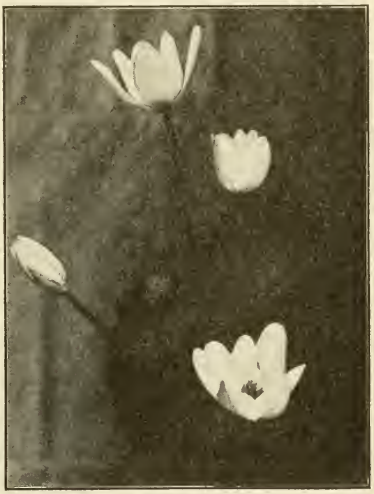
> "The winking Mary-buds begin
> To ope their golden eyes."

—for that is Shakespeare's way of telling us that the marsh-marigolds are in bloom. How gorgeous they make the marshy hillside appear, and is it any wonder that the children are tempted to go out in crowds to gather "cowslips," as they call them? But alas! it means almost without fail a pair of wet feet and then, perhaps, a scolding at home. And, besides, the marigolds look more beautiful after all in the marsh, stretching away in bank after bank among the dead reeds and tangled undergrowth than they do in hand, for the stems are coarse and thick and the individual flowers are often disappointing. But there is some compensation at least in the fresh April sun, the beautiful soft blue of the sky, and the call of the red-winged blackbird as he flits like a flame of fire across the marsh.

Anemone.

Even before the marsh-marigold has appeared, the hepatica, which is commonly spoken of as the earliest

spring flower, may be found pushing up through the protecting leaves on the sheltered hillside. It is strange that this delicate flower should appear before the leaves have ventured out; but it is perhaps not so bold as it appears at first sight, for if you look closely you will see that it has protected itself from the cold by a fine "fur" coat of fuzzy hair. The leaves, too, you will find, like the flower, spring from the root, and this may help to explain why they are longer in coming. Practically all the early spring flowers are scentless, and depend solely on their white or yellow color to attract the insects; but the hepatica is an exception and is the only one that is really fragrant.



Bloodroot.

On the same hillside slope there is another common spring flower, which resembles the hepatica and which has a very beautiful name—the anemone, which in English means "windflower." No one is sure why it is called anemone. Perhaps it is because it flowers in the windy season, perhaps because it opens when the wind blows. At all events, the Greeks had a very pretty story connected with it. Venus, the goddess of love, was enamored of a beautiful youth, Adonis. He was slain in the chase of the wild

boar. Venus wept for his loss, and wherever a tear fell a white anemone with a delicate flush of pink sprang up to mark the spot.

The most delicate, and perhaps the most interesting, early spring flower is the bloodroot, which is found in moist, sheltered places among the undergrowth of the hillside. Nothing could be more lovely than the ten or twelve pure white petals, so delicate that it takes scarcely more than a touch to make them fall. And how careful Mother Nature is to protect the beautiful blossom from the cold. The bloodroot has only one single leaf, which comes up first and curls around into a protecting sheath to guard the flower from sudden frost until it is strong enough to protect itself. But the most curious thing is that a plant with so delicate a blossom should have such red life-blood. Break the stalk off close to the root and note the blood-red stain that oozes out—so deep and enduring a red that the Indians in early times made use of it as "war paint" for coloring their faces.

But now the time has come for the trillium, the wake-robin, and the yellow adder's-tongue or dog's-tooth violet —all of them belonging to the lily family. The trillium, or white lily, is the spring flower the boys and girls know best of all; but probably most of them prefer the wake-robin —the lily with the deep red color, that is supposed to bloom when the robin first returns. When I was a boy I used to think that this red lily was just the same as the white, only colored by the sun, like the cheeks of a red apple. But if I had been a better observer I should have noticed that the wake-robin stands up bold and erect, while the white lily droops, and that the red lily

has a disagreeable, sickening odor, while the white trillium has no scent at all. It is supposed by some that the reddish color and the disagreeable smell are intended to attract the meat-flies.

The yellow adder's-tongue, the third of the lily group, is generally found not far from the edge of a stream. Perhaps the most interesting thing about this flower is its trick of hanging its head—not for modesty, although it is modest—but so that the ants, who are unwelcome visitors because they carry away no pollen, may not be able to climb in and rob it of its store of sweets. Some people prefer to call it the fawn lily or trout lily because of its beautifully mottled leaves; but by whatever name we call it, it is one of the children's favorite flowers of spring; and for the children more than the rest of the world it seems as if the flowers were made.

Trillium.

Wake-robin

THE LEGEND OF THE DANDELION

The Angel of the flowers came down to earth once—long, long ago—and she wandered here and there, in field, and forest, and garden, to find the flower she loved the most. As she hurried on her search, she came upon a gay tulip, all orange and red, standing stiff and proud in a garden, and the Angel said to the tulip: "Where should you like most of all to live?"

Dandelion.

"I should like to live on a castle lawn in the velvety grass," said the tulip, "where my colors would show against the gray castle walls. I should like to have the princess touch me and tell me how beautiful I am."

But the Angel turned away with sad eyes from the proud tulip, and spoke to the rose.

"Where should you like most to live?" she asked the rose.

"I should like to climb the castle walls," said the rose, "for I am fragile, and delicate, and not able to climb of myself. I need help and shelter."

The Angel of the flowers turned sadly away from the rose, and hurried on until she came to the violet growing in the forest, and she said to the violet: "Where should you like most of all to live?"

"Here, in the woods, where I am hidden from every one," said the violet. "The brook cools my feet, and the trees keep the warm sun from spoiling my beautiful color." But the Angel turned away from the violet and went on, until she came to the sturdy, yellow dandelion growing in the meadow grass.

"And where should you like most of all to live?" asked the Angel of the dandelion.

"Oh," cried the dandelion, "I want to live wherever the happy children may find me when they run by to school, or romp and play in the fields. I want to live by the roadside, and in the meadows, and push up between the stones in the city yards, and make every one glad because of my bright color."

"You are the flower I love the most," said the Angel of the flowers, as she laid her hand upon the dandelion's curly, yellow head. "You shall blossom everywhere from spring till fall, and be the children's flower."

That is why the dandelion comes so early and pushes her head up everywhere—by hedge, and field, and hut, and wall; and has such a long, sweet life.

Carolyn S. Bailey.

PREPARING THE SEED-BED

Let us suppose that after the wheat has begun to grow you are able to take up a thin layer of soil a foot deep and put it under an immense magnifying glass. If the soil is in good condition you will see that it is composed of very many fine particles lying loosely together with air-spaces between them, and that the soil particles themselves are filled with moisture. You would be surprised, if you could measure these air-spaces, to find that they take up more than one quarter as much space as the soil itself; and if you could measure the amount of moisture in the particles of the soil, you would find that the water would weigh, in most cases, about half as much as the soil. If there were no air-spaces the roots of the wheat plant would not grow, even if it were possible for them to force their way through the hard soil; and if there were no moisture the wheat could not grow, because it is only through the moisture that the plant can suck up its food from the ground. If, then, the farmer expects to have a good crop of wheat, he must prepare his seed-bed in such a way that the proper air-spaces will be provided and that the soil will hold the proper amount of moisture.

The first step in the preparation of the seed-bed, we have already seen, is to provide it with a sufficient amount of humus in the form of manure or vegetable matter to enrich the soil and to make it porous; and the next step is to cultivate it with plough and harrow in such a way

that the solid lumps of earth shall be broken up into fine, loose particles and exposed to the sun and air.

Before ploughing the ground for the seed-bed the farmer must decide how deep it shall be. All things con-

Breaking the soil with a disk harrow.

sidered, a deep seed-bed is generally better than a shallow one; for the roots of wheat and other plants are seldom able to penetrate into the harder soil beneath, and if the seed-bed is shallow the roots will have less food and moisture, and the soil will dry out more quickly in the hot sun. But it is not always a wise thing for the farmer to plough deep and bring up the new soil to the surface. It often

happens that the layer of soil which contains the humus that is necessary to the growth of the plant is not very thick, and if the plough goes too deep the new soil that is turned up may be unfit for plant growth. To overcome this difficulty a subsoil plough is sometimes used, which loosens the hard soil below without turning it up to the surface. But the farmer must aim, little by little, to enrich his soil with humus to such a depth that he will be able to plough deep without turning up poor soil.

Before beginning to plough, many farmers prefer to break the surface of the ground with a disk harrow. If the ground is at all hard, there is always danger that the furrow slice which is turned over by the plough may not settle down upon the subsoil; and if there are gaps between the furrow slice and subsoil the roots of the plant cannot go down and the moisture from the subsoil cannot rise to the seed-bed. But if the surface is broken by a disk harrow before ploughing, then, when the furrow slice is turned under, the spaces will be filled with a fine surface mould. And when, after ploughing, the surface of the ground is again disked, the seed-bed is usually in good condition.

To own a bit of ground, to scratch it with a hoe, to plant seeds and watch their renewal of life,—this is the commonest delight of the race, the most satisfactory thing a man can do. The man who has planted a garden feels that he has done something for the good of the world.

Charles Dudley Warner.

THE SOWER

And great multitudes were gathered together unto Jesus, so that he went into a ship, and sat; and the whole multitude stood on the shore.

And he spake many things unto them in parables, saying, Behold a sower went forth to sow;

And when he sowed, some seeds fell by the way side, and the fowls came and devoured them up.

Some fell upon stony places, where they had not much earth: and forthwith they sprung up, because they had no deepness of earth:

And when the sun was up, they were scorched; and because they had no root, they withered away:

And some fell among thorns; and the thorns sprung up and choked them:

But others fell into good ground, and brought forth fruit, some an hundredfold, some sixtyfold, some thirtyfold.

Who hath ears to hear, let him hear.

THE BIBLE.

THE SPRING VALLEY CORN CLUB

(Concluded)

When the Corn Club met at the school-house, Mr. Brooks, a young farmer who had taken a course in the agricultural college, was asked to take charge of the meeting. He decided that after our last two meetings it was time for us to have another talk about the growing of corn, and so he chose for his subject: "How to Know Good Seed-Corn."

Mr. Brooks was a practical man, who believed in doing things instead of talking about them, and as soon as the meeting was called to order he brought in a large basket filled with ears of corn. Out of this pile he selected three ears, which he held up, one by one, and afterward passed around so that we might examine them. The first ear which he showed us, was not fully developed, and neither the tip nor the butt of the ear was properly filled out. The next ear was better, but the kernels did not run in straight lines and there were wide gaps between some of the rows. Some of the kernels, too, were small and dull in appearance. The third was a good ear, with well-filled butt and tip, straight rows, and kernels of uniform size and shape, which were tightly fitted together. The ear was a good color and had a bright, healthy appearance; and, as Mr. Brooks pointed out, it was nearly as large around at the tip as at the butt. This kind of ear, Mr. Brooks explained, was likely to produce a good, vigorous growth of corn.

Since we were gathered around him in a close group, it was an easy matter for us to see and judge of the different ears as he held them up before us; and in this way we examined the whole sixty ears which he had in his basket. Out of these sixty, following Mr. Brooks's instructions, we selected twenty ears which seemed to us to answer all the tests of good seed-corn.

In our neighborhood up to this time no one had ever thought of *testing* corn to see if it was good. As long as the crows or the cutworms did not get it, there was no reason, as far as we could see, why it should not grow; and when Mr. Brooks proposed that we make a test of the twenty good ears that we had selected, we were interested in seeing how the test would turn out, although it seemed to us rather a pity that any one should go to so much trouble for nothing.

Mr. Brooks had brought with him what is known as a rag-doll tester. This tester consists of a strip of strong muslin about sixty inches long and nine inches wide, blocked off into squares, which are numbered from one to twenty. This strip of muslin was moistened with warm water, and after it was spread out, Mr. Brooks took six kernels from each ear, two from each end and two from the middle, on opposite sides, and placed each group of kernels on one of the numbered squares. The ear of corn in each case was marked with the same number, so that later on we should be able to tell from which ear the kernels were taken. After the kernels were all laid out with tips pointing to one side of the cloth and germs uppermost, the tester was carefully rolled up and tied with a string in the centre to hold the kernels in place. It was

then placed in a pail of warm water, with the tips of the kernels pointing downward.

We knew, of course, that it would be over a week before we could see the results of the test; but Mr. Brooks gave us directions as to what was to be done with the rag doll in the meantime, and promised to come back in eight or nine days so as to see how the test turned out.

When the rag doll was unrolled, the sprouts on the good kernels were about two inches long; but we found that one group of kernels had not sprouted at all, and that in three other groups the kernels were so weak that they were not likely to produce good hills of corn. Before Mr. Brooks left that day, he had us make a calculation to show how much we should have lost by planting seed-corn from those four ears, supposing they had turned out as badly as the test seemed to show. The sixteen good ears were distributed among the members of the club, and as a result of this experiment we decided that in planting our acres of corn we would not use any seed that had not been carefully tested.

Most of the senior boys and girls in the school had by this time joined the club, and from this time on nearly all our meetings were held in the school, with Miss Stuart in charge. This was very convenient, for as soon as the time came for us to begin work on our acres, there were a great many things about which we needed information. Just when should we begin planting? How much space should we leave between hills and rows? What are the best varieties of corn to plant? How many kernels should we plant to a hill? When should the ground be rolled, and when should we begin to cultivate? How long should

it take the corn plant to come to maturity, and which of the new ears should we choose for seed-corn for next year?

Early in the spring Mr. Brooks offered a fine set of tools as a prize to the member of the club whose acre of corn should produce the largest crop, and Miss Stuart offered a fountain pen as a prize to the boy or girl who should write the best account of the work of the club during the winter. Mr. Brooks's prize was won by Harry Parker, who raised over one hundred and twenty bushels on his acre. No one was more proud of Harry's success than his brother Sam; for although he had made sport of our club to begin with, he was really interested in our meetings and glad that the work of the club had turned out so well. Miss Stuart's prize was awarded to the member of the club who wrote the account which you have just finished reading.

The codling moth.

THE APPLE TREE

Most boys and girls when they find a wormy apple are ready to throw it away in disgust. But if the apple is thrown away, think what happens! The worm will by and by eat its way out of the apple and is sure to crawl off to the trunk of the tree. It will search out some crevice in the bark and there spin a cocoon; and if it is late in the year it will remain here all winter. In the early spring a pretty little moth emerges from the cocoon and immediately proceeds to lay its supply of fifty or sixty eggs within the blossoms of the tree, so that the apples next fall will be wormier still. This pest of the apple orchard, whether in the form of a moth or a cocoon or a worm, is known as the *codling moth.*

There are two ways in which the farmer may get rid of the codling moth and so prevent his apples from becoming wormy. In the first place, he can protect the birds which feed on the grubs that are hidden in the cocoons. When,

An apple orchard in spring.

on a winter day, you see the little downy woodpecker working away at the trunk of an apple tree, you may be sure that he is searching the crevices of the bark for the cocoons of the codling moth. No matter how well they may be hidden under the bark, there are few of them that escape his sharp eyes. His bill is just suited for chiselling into the soft wood. His tongue is long and elastic, and the tip of it is horny and is fitted with barbs, so that if once he spears a cocoon the grub inside of it cannot escape. The downy woodpecker is one of the best friends of the farmer; but when the farmer's boy is armed with a gun or when the sportsman from town goes for a day's shooting in the country, the downy makes a good target, and it is an easy matter for the gunner to shoot away some hundreds of dollars with a single shot. The downy woodpecker is quite tame, and if you are cautious you can sometimes come quite close to him, close enough at least to see the scarlet crown patch and the stiff tail-feathers with which he props himself against the tree when at work.

The downy woodpecker.

A second means which the farmer can make use of to prevent the apples from becoming wormy is to spray the

trees in the early spring with a poison called lead arsenate. That will kill the worms when they are first hatched from the eggs. The poison is sprayed on the trees by means of a certain kind of pump. This spray should be first used just after the blossoms fall, for it is then that the eggs hatch out and the worm begins to eat into the young fruit that is just beginning to form. Three or four weeks later the spray is repeated, and in midsummer, when a second brood of worms hatch out, it is again used in the same way. The spraying, if properly done, never fails to kill the worms, and it is safe to say that the farmer who not only sprays his trees but protects the downy woodpecker will have a full crop of apples which do not have to be thrown away because they are wormy.

Besides the codling moth, the apple tree has a good many other enemies, which the farmer has to fight. The buds and leaves are attacked by caterpillars of various kinds. The trunk and branches are sometimes covered with very small insects, or "scales," no larger than a small pinhead, which suck out the juices. The bark also is riddled with holes made by grubs called borers, which live upon the juicy inner bark.

The farmer uses various means to get rid of these enemies. He sprays his trees with various mixtures; he cuts off and burns the branches that are badly diseased; he wraps sticky bands around the tree trunk to prevent caterpillars from climbing. But if he would prevent his young son from robbing the birds' nests, or from going out with a gun and shooting the orioles and the cuckoos, he would find his task of fighting the insects to be very much easier.

THE PLANTING OF THE APPLE TREE

Come, let us plant the apple tree.
Cleave the tough greensward with the spade;
Wide let its hollow bed be made;
There gently lay the roots and there
Sift the dark mould with kindly care,
And press it o'er them tenderly,
As, round the sleeping infant's feet
We softly fold the cradle sheet;
So plant we the apple tree.

What plant we in this apple tree?
Buds, which the breath of summer days
Shall lengthen into leafy sprays;
Boughs where the thrush, with crimson breast,
Shall haunt and sing and hide her nest;
We plant, upon the sunny lea,
A shadow for the noontide hour,
A shelter from the summer shower,
When we plant the apple tree.

What plant we in this apple tree?
Sweets for a hundred flowery springs
To load the May wind's restless wings,
When, from the orchard row, he pours
Its fragrance through our open doors;
A world of blossoms for the bee,
Flowers for the sick girl's silent room,
For the glad infant sprigs of bloom,
We plant with the apple tree.

What plant we in this apple tree?
Fruits that shall swell in sunny June,
And redden in the August noon,
And drop when gentle airs come by
That fan the blue September sky,
While children come, with cries of glee,
And seek them where the fragrant grass
Betrays their bed to those who pass
At the foot of the apple tree.

And when, above this apple tree,
The winter stars are quivering bright,
And winds go howling through the night,
Girls, whose young eyes o'erflow with mirth,
Shall peel its fruit by cottage-hearth,
And guests in prouder homes shall see,
Heaped with the grape of Cintra's vine
And golden orange of the line,
The fruit of the apple tree.

WILLIAM CULLEN BRYANT.

THE CAMPAIGN

(Concluded)

The campaign against the army of flies was scarcely well begun when the armies of weeds and insects began to appear. Lieutenant Dick and Major Milton had been engaged in fighting weeds in previous years, and they knew how difficult it is to make headway against them. But in those days they had been mere privates enlisted against their will and fighting with mere garden weapons; and privates couldn't be expected to fight as well as officers with swords and bayonets!

One of the difficulties with the campaign against the army of weeds, as both boys foresaw, was the fact that the enemy were likely to push forward over a wide front, and that, having once intrenched themselves, they were very difficult to dislodge; for even if they were bayoneted, a large percentage were sure to recover from their wounds.

"The only way that it is possible to defeat them," said General Ben, "is to keep attacking them in their intrenchments, until finally they become worn out and die from exhaustion.

"The best way for us to meet them, it seems to me, is to divide our forces and send one of our officers against each division of the enemy. I will undertake to fight the armies of Field-Marshal Mustard and Major Thistle, and General Burdock and all the other tribes that have intrenched themselves in the fields and highways. Nora here will try to keep back the forces of General Dandelion,

who has pitched his tents on the inner grounds of the fort. You'll see the golden shields of his soldiers from the windows of the fort before very long. Dick and Milton will hold the most dangerous positions. It will be their duty to bayonet every one of the enemy's advance guard who tries to creep in upon the fort by scaling the walls of the garden.

"You all agree? Then, fix bayonets, and let us to the charge!"

About a week later, when the fruit-trees in the orchard were beginning to blossom, General Ben came into the officers' quarters in the fort with a number of twigs in his hand, and after laying them down carefully, he took from his pocket a small box, together with a magnifying-glass.

"What have you there, General Ben?" said Dick, saluting his superior officer.

"Prisoners of war," replied General Ben. "It is time for us to begin our attack on the army of insects. The enemy has taken cover in the orchard in large numbers, and is about to make an attack upon the convoys which are bringing our next season's food supplies.

"This," continued General Ben as he opened the box which he had brought with him and showed them a small brownish moth, "is one of our worst enemies. It belongs to the army of codling moths. All through the winter they have lain in ambush under the bark, and now they are coming out of their shelters and going up into the trees to raise new armies. The raw recruits of the first army will appear in a few days and take up their quarters in the hearts of the blossoms."

"Ugh," said Milton, making a wry face. "I know

what you mean. It's these codling moths that make the apples wormy!"

"That's just it!" said General Ben, "and if we want to have good apples in this fort next winter, we must get out our machine guns and begin to fight these new enemies right away."

"Just as soon as the blossoms fall," said Nora, who had been reading up the latest war bulletins.

"What do you feed the machine guns with?" inquired Milton. "I've heard father say, but I've forgotten."

"Why, with lead of course," said Nora scornfully. "Arsenate of lead. Don't you know that bullets are made of lead?"

"What did you bring the twigs in for, General Ben?" said Dick, who had been examining them rather cautiously.

"Take another look. There's a whole squad of prisoners on that twig," replied General Ben. "Better have a look at them through the field-glasses. These prisoners belong to the San José battalion. They are very small, and they are dangerous enemies because they spread very rapidly. The soldiers that you see on this twig will raise hundreds of millions of new recruits this summer if they get a chance."

"Why, there's one of them running around now," said Dick, "a little yellow fellow."

"He hasn't settled down yet," replied General Ben. "When he does, he'll put his shield over his head and stay in one place until he sucks the life-blood out of his enemy. They're a hard enemy to fight, but we will load our machine gun up with a different kind of ammunition and spray the whole San José army with a shower of bullets."

"I've read somewhere," said Nora, "that they sometimes bring big siege guns down from the concentration camp to go from fort to fort, just to fight this one enemy."

"That's all right," replied General Ben. "We may have to call in the siege guns, too. But let us try our own machine guns first."

The attack on the codling moths and the San José scale was only the first stage in the campaign against the hosts of insects which summer after summer laid siege to the farm. Canker-worms, which feasted on the leaves of the apple trees; caterpillars, which set up their "tents" on the ends of the branches; borers, which lived on the inner bark—all had to be attacked and destroyed in turn, in order that the apple crop might be protected. Curculios had to be shaken down from the plum trees; cabbage-worms and tomato-caterpillars, and potato beetles and cutworms had to be destroyed; "wrigglers" had to be smothered in the water-barrels, and ants poisoned with insect powder in the kitchen. When one army was vanquished, it seemed as if another was always ready to take its place.

But, although these engagements were sometimes desperate, the struggle was by no means hopeless, and the officers within the fort were encouraged by the fact that they had an army of splendid allies on their side. All winter long a scouting column of chickadees and nuthatches and downy woodpeckers had searched the crevices in the bark for hidden cocoons. In the spring the orchard was visited by bluebirds and orioles and cuckoos, and the garden was patrolled by robins and wrens; while the phœbe and king-bird and wood-pewee did outpost duty

about the grounds and outer forts. Overhead, a flying corps of keen-eyed swallows and swifts swooped down upon the invaders, and even after darkness had fallen, a battalion of bats and night-hawks circled to and fro in pursuit of the enemy.

And amid all this warfare, amid the noise of bayonet and machine gun and the signal calls of pickets and patrols, in a quiet corner of the garden there sat a swarthy, homely, silent guard, who slew his thousands and tens of thousands of the enemy, when in an evil moment they chanced to pass his way. His name was Corporal Toad.

When the summer was over, the fight against the countless enemies who besieged the fort was not yet finished. It is a fight which goes on without ceasing, from year to year. But General Ben had the satisfaction of knowing that his officers were better and more intelligent soldiers than when they began and he had no little pride in recommending to the commander-in-chief that Lieutenant Dick and Major Milton and Adjutant Nora should be given some reward for distinguished service and promoted to a higher rank when the fight should be continued for the coming year.

The great point of advantage in the life of the country is that if a man is in reality simple, if he love true contentment, it is the place of all places where he can *grow*. The city affords no such opportunity. Indeed, it often destroys the desire for the higher life which animates every good man.

David Grayson.

THE REDWING

I hear you, brother, I hear you,
Down in the alder swamp,
Springing your woodland whistle
To herald the April pomp!

First of the moving vanguard,
In front of the spring you come,
Where flooded waters sparkle,
And streams in the twilight hum.

You sound the note of the chorus
By meadow and woodland pond,
Till, one after one up-piping,
A myriad throats respond.

I see you, brother, I see you,
With scarlet under your wing,
Flash through the ruddy maples,
Leading the pageant of spring.

Earth has put off her raiment
Wintry and worn and old,
For the robe of a fair young sibyl,
Dancing in green and gold.

I heed you, brother. To-morrow
I, too, in the great employ,
Will shed my old coat of sorrow
For a brand-new garment of joy.

BLISS CARMAN.

Nest of chipping-sparrow.

BIRDS OF THE FARM: ORCHARD AND GARDEN

One of the first birds that should be provided for in every farmyard is the house-wren; and as soon as the birds return in the spring a wren-box should be put up in some suitable place. The box must not be too large; an ordinary square cigar-box or chalk-box is a good size. The entrance should not be larger than an inch in diameter, and the box must be nailed up securely, out of reach of cats. If boxes are not provided, the wrens are, of course, forced to look out for places for themselves. I found a nest once, placed on top of one of the scantlings in a shed. On another occasion the wrens made use of the letter-box at the front gate, and, in the yard of one of my neighbors, they have taken possession of an old watering-can hanging on the outside of a wall.

Besides the house-wren, every farmyard and orchard has its robin redbreasts. The robin somehow appears to me to be a part of the farm—a sort of tenant who pays me his ground-rent in the grubs and worms that he eats; and if he does help himself to a few cherries, it is only fair to remember that he has already earned them many times over.

Another bird which makes his home in the neighborhood of the farmhouse and garden is the chipping-sparrow. Early in April you may hear his simple, chipping note from the trees of the orchard or the shrubbery of the lawn; and when you see him you will recognize him at once by the pale-gray breast and chestnut crown. You sometimes find the nest in your apple tree or in an evergreen on your lawn, or sometimes in the honeysuckle at your very door; and when you have found it you cannot help expressing your admiration; for it is seldom you find so pretty a picture as the little cup-like nest with its lining of horse-hair and its five tiny, speckled, sky-blue eggs.

Early in May, the clear whistle of the oriole may be heard from the budding shade trees, or the fruit trees in the orchard; and the first sight of this brilliantly dressed songster is one of the treats of early spring. As soon as the leaves are well advanced, the orioles begin nest-building, and this is a most interesting operation in bird architecture. First, several strings are fastened to the branches; then the ends are joined together; and into this framework is woven material of all sorts—strings, thread, and hair being the chief components. In pasture-fields, where horses are kept, the orioles frequently gather hair from the barbs of the fence. Old oriole nests, too, are brought into

use very frequently, and the best material is carried away from them. One summer I watched an oriole building in an elm tree across the road, and was amused at the performance of a little fly-catcher and a summer yellowbird, who took turns in stealing strings and hair from the nest of the oriole, in the owner's absence. But they were at last discovered and driven off.

In the meantime, throughout the spring months the orchard and garden are visited by many other birds. In early spring the song-sparrow sings his sweet and simple melody from the shrubbery in the garden. The downy woodpecker inspects my apple trees in search of cocoons. A vireo sings his rippling song from amid the orchard blossoms. The yellow warbler is building in a shade tree near by; and from the other side of the orchard I hear the mournful call of the wood-pewee or the hollow clack of the cuckoo as he comes to search my orchard for caterpillars. All the birds are my friends—my willing helpers who do their work ungrudgingly, asking only for my protection in return.

A vireo's nest.

THE FARMER'S FRIENDS

From "The Birds of Killingworth"

The thrush that carols at the dawn of day
From the green steeples of the piny wood;
The oriole in the elm; the noisy jay,
Jargoning like a foreigner at his food;
The bluebird balanced on some topmost spray,
Flooding with melody the neighborhood,
Linnet and meadow-lark, and all the throng
That dwell in nests, and have the gift of song—

. . . . . .

Do you ne'er think what wondrous beings these?
Do you ne'er think who made them, and who taught
The dialect they speak, where melodies
Alone are the interpreters of thought?
Whose household words are songs in many keys,
Sweeter than instrument of man e'er caught!
Whose habitations in the tree-tops even
Are half-way houses on the road to heaven!

Think, every morning when the sun peeps through
The dim, leaf-latticed windows of the grove
How jubilant the happy birds renew
Their old, melodious madrigals of love!
And when you think of this, remember, too,
'Tis always morning somewhere, and above
The awakening continents, from shore to shore,
Somewhere the birds are singing evermore.

Think of your woods and orchards without birds!
Of empty nests that cling to boughs and beams,
As in an idiot's brain remembered words
Hang empty 'mid the cobwebs of his dreams!
Will bleat of flocks or bellowing of herds
Make up for the lost music, when your teams
Drag home the stingy harvest, and no more
The feathered gleaners follow to your door?

. . . . . .

You call them thieves and pillagers; but know
They are the winged wardens of your farms,
Who from the cornfields drive the insidious foe,
And from your harvests keep a hundred harms;
Even the blackest of them all, the crow,
Renders good service as your man-at-arms,
Crushing the beetle in his coat of mail,
And crying havoc on the slug and snail.

HENRY WADSWORTH LONGFELLOW.

NATURE'S SONG

There is no rhyme that is half so sweet
As the song of the wind in the rippling wheat;
There is no meter that's half so fine
As the lilt of the brook under rock and vine;
And the loveliest lyric I ever heard
Was the wildwood strain of a forest bird.

MADISON CAWEIN.

TOM'S BICYCLE

The Wilson boys, who lived two farms down from ours, had bought a bicycle. It was an old, second-hand machine, pretty much out of date in make and not in the best repair; but it was enough to give my brother Tom, who was four years older than I, the "bicycle fever." But when he asked father to buy him a wheel, father, as might have been expected, said, "No," very decidedly. But Tom was not to be so easily put off, even though he knew that when father said, "No," he meant it.

The next day, when we three were hoeing in the garden, he began a conversation which sounded innocent enough, but which as I knew—for I was in the secret—was part of a plan to lead father into changing his mind about the wheel.

"Father," he began, "how much ground is there in that patch of potatoes in the field next the barn?"

"About two acres, I think," replied father, as he kept on hoeing.

"And how many bushels of potatoes do you grow on it?"

"I don't know exactly," replied father, "perhaps three hundred bushels."

"That's about one hundred and fifty bushels an acre, isn't it?" continued Tom. And then after a pause——

"Father, I've got something to ask you. If I work those two acres for you next year, with Jack here to help me,

will you give me all the potatoes I can make, over three hundred bushels?"

When father questioned further, Tom confessed that he wanted to try to earn the wheel out of the extra potatoes, and after thinking it over, father decided—as I overheard him telling mother—that "it might be a good thing for the boy"; and he agreed, under certain conditions, to let Tom undertake to carry out his plans. But there was one thing that father didn't find out till later—that the plans were really mother's, and that she had suggested the scheme to Tom and promised to help him if father would consent.

From that time forward, Tom took a great interest in reading the potato bulletins, and I think he discussed the growing of potatoes with half the farmers in the township. At mother's suggestion, too, he kept a note-book, and drew up a chart besides, on which he might keep dates and figures, and any special notes that he required.

If it had not been for Tom's experiment, father might have planted another crop of potatoes in the field by the barn; but so as to give Tom a chance to show what he could do, he gave him the choice of any field on the farm. Tom chose the corner of a clover-field which had been well manured the previous spring, and which was composed of good, rich, sandy loam; and in the fall, after the other crops were off, he and father measured off the ground, and Tom began to prepare it for the spring planting.

Father did not usually disk the ground before ploughing, but Tom wanted to disk, and, of course, father let him have his way. After the disking was finished, the field

was ploughed. "Plough deep," said the bulletins, "and give the roots a chance," and so Tom made his seed-bed eight or nine inches deep, and, after disking the ground again, he left it to lie for the winter.

In the spring Tom was in no hurry to plant, for the season is long and it is better that the ground should be warm before planting. So he disked the ground again and went over it with the roller to make the seed-bed more compact.

Grandfather offered to help.

In the kind of seed he would use Tom had no choice. Father had saved about fifty bushels of Early Rose potatoes for seed, and, of course, these potatoes had to be used. The Early Rose is a good variety, though no better than some others, but Tom found that these particular potatoes were scabby and that among them there were very many small ones. To kill the insects that caused the scab, he bought a pound of formaline at the druggist's and made a solution in which he soaked the potatoes, according to the directions in the bulletin; and since the clover-field which he had chosen had never been used for potatoes before, he was

pretty sure that the ground there would be healthy and free from scab disease.

When it came to cutting up the potatoes for seed, grandfather offered to help. We had always cut the potatoes up before so as to give one eye to each piece; but this time we cut them lengthwise in quarters and halves according to the size of the potato, and planted the small ones without cutting. The reason for cutting lengthwise, Tom explained, was because the eyes were mostly at one end, "and," he added, "if you cut the potatoes into very small pieces, the plant doesn't have as much food to live on when it begins to grow."

We planted the potatoes in rows three feet apart, so that there would be room to cultivate, and left one foot between plants. The hills were about four inches deep, and we used only one large seed piece for each hill. We were both heartily glad when the planting was done, for it was not an easy task; but we had splendid weather, and two days after we finished planting there came a fine warm rain, which moistened the ground and gave our potato crop a good start.

As soon as the ground had dried out, Tom went over it with the harrow, and later on, just when the plants began to show through the ground he went over the field again so as to keep the surface of the ground soft and to kill the weeds. And now there were just two things left for us to do: keep the ground properly cultivated, and see that the tops were kept free from potato bugs and other insects.

In cultivating, Tom followed his instructions faithfully. He had been warned not to cultivate too deep, because

it would dry out the seed-bed and perhaps injure the roots; and as a result he kept his ground level or nearly level instead of "hilling" it up into ridges. Once early in the season we went over the field with a hoe, to take out the

Cousin Fred, who was visiting us from the city, helped us to pick them.

weeds that the cultivator had missed. The potato bugs did not trouble us greatly; but when they first began to appear, Tom went over the field and sprayed the plants with a solution of arsenate of lead to keep the bugs down.

When the tops of the potato plant are strong and healthy it is a pretty sure sign that there is a good crop below, and father himself admitted that he had never seen as good-looking a field of potatoes on our farm.

Early in September, when the tops began to die down, I wanted Tom to dig them; but, though he was just as

anxious as I to see how the crop would turn out, he would not touch them.

"Wait till the vines are all dead," said he. "Don't you know that potatoes keep on growing as long as there are any green stalks left? That's where father made his mistake last year. He dug his potatoes too early."

When the time came to take the potatoes up father dug them for us with the potato-digger, and Cousin Fred, who was visiting us from the city, helped us to pick them. When father saw the first few hills he owned they were beauties. And so they were, for they were large and well formed, and, what was better still, they were free from any signs of scab disease.

No field of potatoes, I am sure, was ever more quickly or thoroughly picked than that, and to Tom's delight, before the first half of the field had been cleared, over three hundred bushels had already been stored away. Even after we had allowed for the seed-potatoes, we had over three hundred and ten bushels clear, after paying father three hundred bushels for his share in the crop.

Every one in the neighborhood, you may be sure, heard about Tom's new bicycle and how he earned it; and some of the neighbors, too, knew about mother's warm winter coat which Tom gave her for "her share." And as for father, he had in his potato cellar the best and cleanest stock of potatoes ever grown on his farm.

TOMMY

The Story of a Woodchuck

Arctomys Monax was his name—Tommy for short. Our acquaintance grew from a similarity of tastes. We both liked the wooded hillside with its beech and maple and hickory, overlooking the wide valley below, with the tender green of its pasture-land dotted with elm and buttonwood, and the gleam of the curving river stretching away to the south. We both liked the balmy spring air, and the smell of the June clover, and the warmth of the early morning sunshine where it played on the fallen logs and stumps, between the branches.

Tommy had not always lived on this hillside. He was born one bright day in early May in a strange enough spot for a birthplace—a graveyard. There was a clump of wild trees and bushes in an unused corner of the cemetery, and here mother woodchuck had chosen to rear her brood. An old white lilac nodded over the mouth of the den, and through the long, coarse grass and shrubbery on every side ran the woodchuck paths which led to the strange white world in the open space beyond.

But in the course of the summer the corner of the cemetery was cleared up and Tommy took up his quarters in an old orchard a little farther down the valley. This was an ideal spot; for the orchard was deserted except for the bluebirds who built in the holes in the trees and posts, and a red squirrel who scolded and sniggered all day long

from the corner of a broken-down shed near by. And then, what an abundance of food! The ground was covered with a bountiful supply of apples, and to a woodchuck's eyes the heavens themselves seemed to rain fatness. But, alas! that very same autumn the orchard was cut down and the field ploughed up; and Tommy retreated precipitately one dark night, swam the river, and finally found a refuge in an old woodchuck hole under a stump on the hillside. Shortly after this a heavy frost fell, and Tommy closed up both the doors of his den with leaves, rolled himself into a ball, and went to sleep for a full six months—not even rolling over and blinking on Candlemas Day, when all good woodchucks should be out looking for their shadows.

The middle of April had come, and I was out for a stroll, stopping late in the afternoon to rest on the old rail fence that crossed the hillside. I was thinking of moving on, when all at once I heard a strange cry or rather whistle—a clear, quavering diminuendo, not unmusical, but new and strange. Again and again it was repeated, but though I scanned every bush and stump and fallen log, I could not discover its source; it seemed to come from everywhere. In the midst of one of the pauses, however, I thought I heard the dry leaves rustle in the corner of the fence immediately beneath my feet. I looked down and listened intently. Yes, it was evident that the cry came from the dead leaves. I shifted my position cautiously, reached the ground, and approached the fence corner. There was no doubt of it now; between the repeated whistles the leaves rustled slightly, as if something were stirring them from beneath. What could

it be? I waited quietly for some minutes, then plunged my hand into the leaves. But I was not quick enough—which was all the better for my hand.

Tommy was waking up for the spring, and like all other living things was singing his spring song.

After waiting a few moments I was about to go away, when I observed a pair of eyes watching me intently from beneath a stump some ten or fifteen feet away. I moved cautiously to one side, just out of range. Slowly the head was protruded, and the pair of eyes followed me. Then the head was withdrawn, then again protruded, and so on, half a dozen times, until I was fully scanned, observed, and pronounced upon, and then with one final prolonged whistle of satisfaction he withdrew at last for the night. This was my first introduction to Tommy.

Tommy did not reason. None of the wild animals do. He did not even make comparisons, and he lived entirely in the present. But he made good use of his ears and eyes; and what was more important, he lived almost entirely by the aid of his inherited habits, which we call instincts. And one of the strongest woodchuck instincts is curiosity—the habit of investigating. All the wild animals, and men and women, too, are fond of the novel and interesting, in so far as they can afford to be. Tommy and his tribe have a considerable advantage in this respect. At the mouth of their burrow they are safe and can indulge their curiosity to their heart's content. They are fierce fighters, and no dog or other enemy dare follow them into their den. All their old enemies, the bears, wolves, lynxes, and even foxes are gone, and they are left in undisturbed possession. And so they sit and watch

the whole panorama of the woods, ready, if need be, to disappear into cover at the lifting of a finger or the snapping of a twig.

It was this curiosity that made it possible for me to get better and better acquainted with Tommy in the course of the season to follow. He was, as I soon found out, particularly susceptible to sound, and a series of whistles was almost certain to attract his attention.

In the course of a few weeks I discovered that there was another woodchuck in the burrow. There was a regular woodchuck colony on the hillside and Tommy had already chosen a mate and set up housekeeping. I had no difficulty, however, in distinguishing my friend, for the extreme lightness of his coat and the deeper red of the under parts distinguished him in an unmistakable way from all the other woodchucks on the hillside.

The young woodchuck family were born about the end of the first week in May, and in the course of two or three weeks they were able to shift for themselves. But, strange to say, they showed absolutely no fear and behaved with very little discretion; one made a meal for a hen-hawk; another was worried by the farmer's dog; and how the remaining two escaped was a matter for surprise.

In the meantime Tommy was busily engaged, working with all his might in digging a fresh burrow in the pasture-land close by the river side, and in clearing out a deserted hole in the clover-field close to the barn at the top of the hill, so that during the year he might have a variety of homes according as his inclinations favored. This task completed, the rest of the year was a holiday, with nothing to do but to sleep, eat, and grow fat, with the occasional

excitement of a chase and a narrow escape, to prevent life from becoming too stale.

Getting a living was a matter of little concern, for grass was his staple and his food supplies lay right at his door. The young saplings and undergrowth in the neighborhood of his burrow showed the marks of his teeth, but as a rule he did them little damage. Clover was the food he liked best, and sometimes, too, in the warm evenings of later June he risked an expedition to the farmer's garden, and regaled on whatever vegetables he could find—peas, beans, cabbage, corn, and even pumpkin-vines.

Tommy.

The most of the day he slept indoors, but he liked an early morning breakfast with the fresh dew upon it for drink, and at noon, if all was well, he took a sun bath in the sand at his door. Late in the afternoon he came out again, and this was the most substantial meal of the day. And with Tommy, as with all other woodchucks, it was a bite and a look. A few mouthfuls of clover and then the whole horizon must be scanned, for behind some distant stump or upturned root

or clump of grass an enemy might lurk. Is it any wonder that the eyes of the birds and animals are wild, and that they wear a hunted look? Their whole existence, sleeping, eating, watching, is a dream of fear.

But if Tommy got his living without much trouble, this mode of life had its own decided drawbacks and disadvantages, as we shall see. An animal such as the fox, for instance, that hunts its prey night and day, winter and summer—sooner or later develops a surprising keenness of scent that is its safeguard in time of danger. But the woodchuck has only to crop the clover at the door of his burrow for food, and it is upon keenness of sight and hearing, rather than upon sharpness of scent, that he depends in time of danger. The steel trap that you bury in the sand or cover with loose grass at the mouth of his den does not appeal to his sense of smell, and he will walk boldly into a box trap with almost as little hesitation as into his burrow. The only thing that saves him from destruction is that his skin is not worth the tanning.

Before the middle of June I found that I was not the only one who was interested in the woodchuck colony on the hillside. One afternoon, on taking my usual walk, I found that all the holes, a score or more, were blocked up with sticks and leaves. I understood at once; this was the first move of the farmers' boys against the woodchucks. Most farmers do not object to one or two in their fields. Farm work would be dreary if there were no wild animals to vary the monotony. But too many woodchucks are a nuisance. They tramp down more clover than they eat; they spoil a certain amount with the earth which they throw out from their burrow; but, worst of

all, they undermine the ground so that the horses' feet sink into the holes, and the machinery of the mower and binder is sometimes injured. An effective way of disposing of them is to sprinkle some copper bisulphide in the hole and then close it up. The fumes of the gas have a fatal effect, and the woodchuck is simply buried in his own grave. But to the farmer's boy there is no fun in this. He prefers the excitement of the trap, and so the holes were blocked up. In the course of a day or so the boys were able to tell which dens were occupied, for the woodchucks were forced to clear away the openings to come out. And then the excitement began.

Tommy's mate was the first to suffer, for she had taken up quarters in the ground hole near the river bank, and the boys at once proceeded to drown her out. The ground was sandy and it took twenty or thirty pails of water to fill the den; for, needless to say, mother woodchuck had no intention of coming out until she was forced, and so long as she could keep her nose above water she did not care. But the inevitable came at last, and she was doomed.

For the old woodchuck in the hole under the roots of the elm at the foot of the hill a steel trap was used. But a day of rain set in, and when the boys came to look for their victim they found only a mangled woodchuck's paw, bitten off close to the cruel steel.

Another one farther up the hillside was smoked out by lighting a fire of leaves at the entrance of one of the holes and fanning the smoke in through the passage so that it came out at the other opening. But with Tommy none of these devices worked. He was too far from the river for them to carry water, and his burrow ran crookedly

up the hill so that, even though they burned the stump down to the ground, the smoke could not reach him. The steel trap was used, but fortunately a small twig prevented it from holding tight, and he was able with a desperate wrench to pull his foot loose, leaving only a little hair between the jaws of the trap. Once he was chased by the dog and had a narrow escape, but safe within the mouth of the den he was able to turn and chuckle defiance at his pursuer. Once too he received a heavy charge from a shotgun, but a thick skin and a thicker skull were an effective protection. As a last resort the boys tried digging him out, but like a wise woodchuck he had a side passage slanting off uphill from his main one, and long before they had reached his last retreat he had dug his way off through the soft sand, filling up the hole behind him, so that to their chagrin they found nothing but an empty burrow when they reached the spot. The next morning a little round hole in the grass showed where he had reached the surface of the earth and escaped.

A few days later, wishing to capture a live woodchuck for a photograph, I set a box trap close to a newly dug hole on the next farm a little farther up the valley, and concealed myself a short distance away to await developments. Late in the afternoon a woodchuck appeared at the door of the den, looked cautiously on all sides, and finally emerged. A glance was sufficient to show me that it was Tommy. He examined the box trap curiously, but decided to try the fresh grass before venturing in. He did not eat much, however. At every two or three mouthfuls he raised himself on his hind legs, crossed his paws over his breast, and listened intently. Then a run of a

few steps meant a fresh examination. An oriole whistled from a tree near by, and he turned his head cautiously, inquisitively, to listen. Then from my hiding-place I whistled also. He moved never a muscle, even when I advanced a few steps toward him. Suddenly a twig crackled. It was a noise that he knew of old as a danger signal, and immediately he dropped and ran. A few minutes later he emerged again and by a strange caprice walked straight for the box trap, ate the apple outside, examined the doorway, and then walked in and reached for the bait. A moment later the door fell shut behind him, and he was my prisoner, chattering with his teeth and snapping at me fiercely from behind the wire screening.

To take his picture I carried the trap out on to the flats a quarter of a mile or so from the den, where I could find no hole near to which he might escape, and then I let him go. He stood for a second only, evidently taking his bearings, and before I could reach for my camera he was off like a shot in the opposite direction from what I expected he would take. I tried to head him off, but just as I thought I might succeed, he dropped like a bullet into the ground. It was an old woodchuck's hole which I had not noticed! But Tommy knew every inch of the valley.

This was my last experience with him. Both holes, by the farmer boys' test, remained unused for the rest of that season, and Arctomys Monax of the light brown and the deep red slept his winter sleep on some other hillside.

"WHAT DO WE PLANT WHEN WE PLANT A TREE?"

What do we plant when we plant a tree?
We plant the ship which will cross the sea.
We plant the mast to carry the sails;
We plant the planks to withstand the gales—
The keel, the keelson, the beam, the knee;
We plant the ship when we plant the tree.

What do we plant when we plant the tree?
We plant the houses for you and me.
We plant the rafters, the shingles, the floors,
We plant the studding, the lath, the doors,
The beams and siding, all parts that be;
We plant the house when we plant the tree.

What do we plant when we plant the tree?
A thousand things that we daily see;
We plant the spire that outtowers the crag,
We plant the staff for our country's flag,
We plant the shade, from the hot sun free;
We plant all these when we plant the tree.

HENRY ABBEY.

SUMMER

A SONG OF WHEAT

Back of the bread is the snowy flour;
Back of the flour is the mill;
Back of the mill the growing wheat
Nods on the breezy hill;

Over the wheat is the glowing sun,
Ripening the heart of the grain;
Above the sun is the gracious God,
Sending the sunlight and rain.

ROUND AND ROUND THE FARM

It is not always an easy thing for the farmer to decide what crops he will grow from year to year. A great deal depends upon the prices of different farm products, the cost of growing them, and the help which he has on the farm. But there is one thing on which the best farmers are all agreed: that on the ordinary farm it does not pay to grow the same crops on the same fields year after year. If, for instance, you were to grow crop after crop of wheat from a certain field you would find that some of the plant-foods would soon be used up and that the soil would become poor for lack of humus. And if you were to grow crop after crop of potatoes from the same soil you would find it difficult to keep the ground free from scab and other plant diseases. As a matter of fact, different crops use plant-food from different parts of the soil; and the change from one crop to another not only gives the soil a rest, but gives the farmer an opportunity to keep down the weeds and to put the soil in good condition.

But in providing for a change of crop, if we wish to secure the best results it usually is best to follow some definite order. After a crop of wheat, for example, which uses up a good deal of plant-food from the surface of the soil, it is generally a good thing to follow with some legume such as clover, which produces nitrogen and at the same time helps to keep up the supply of humus when it is ploughed under. And after a crop of clover, when the ground has been ploughed up it is usually a good thing

to put in a hoed crop such as potatoes or turnips or corn, which will help to loosen up the soil and keep it free from weeds. By this time the ground will again be in good condition for wheat or oats or some other sort of grain. When different crops follow each other in this way so as to form a series, they are said to come in *rotation*, which is another way of saying that they come around in a regular order like the spokes in a wheel. The simplest sort of rotation is the one which we have just described, where grain, legumes, and a root crop follow each other in this order; but the farmer in some cases finds that other rotations are best suited to the needs of his farm, and four, five, and even six year rotations are sometimes employed.

It is this way with the farmer. After the work of planting and cultivating, after the rain has fallen on his fields, after the sun has warmed them, after the new green leaves have broken the earth—one day he stands looking out with a certain new joy across his acres (the wind bends and half turns the long blades of the corn) and there springs up within him a song of the fields. No matter how little poetic, how little articulate he is, the song rises irrepressibly in his heart, and he turns aside from his task with a new glow of fulfilment and contentment.

David Grayson.

BREAKING IN THE COLT

Down the field comes the colt, tail erect, neck arched, prancing as if he could not restrain his glee and gladness. Halt! There he is at the fence, standing stock-still, staring at a passing wagon. Little he thinks that soon he, too, will be put to drawing loads! Yet even now it is time to begin "breaking in" the colt.

Staring at a passing wagon.

When should the colt's training begin? In the very first year of his life. "What," you say, "put a tiny little colt, not a year old, in harness!" No, but begin to *train* him while he is still a very small colt nursing by his mother's side. If we permit him to run wild until he has reached his full strength, and then try to saddle and bridle him by force, we shall not have a gentle, well-trained horse.

Let the colt be handled from the first by different persons, so as to make him fearless. Teach him to feed from your hand; to allow his feet to be handled; to be led to and fro by the forelock; to endure a hand placed on his back; to permit you to pat and caress him. Never pun-

ish him at this stage, but keep sugar or apples in your pocket and reward him whenever he does as you wish.

As he grows a little older, strap a pad on his back for a few hours every day—then stirrup leathers with the stirrups attached. If you accustom him to dangling straps he will be less likely to become frightened if the harness happens to break.

When he is about a year old, the colt's bit should be occasionally put into his mouth, and shortly after this, he should be walked in a circle, with a long rein attached to the bit. By this means, teach him to moderate his pace—to come toward you, or to stop dead short at a word from you. This will require time—and patience.

When it is time to teach the colt to go in harness—and he should not be put to work until he is three and a half or four years old—put the harness on very carefully, making sure that it is strong and that it fits well. Let him stand in his stall or walk about the yard until he is used to the pressure of the different parts and to the rattling. When he is quiet, check him up loosely and drive him about the yard.

When he will stop and start at a word and will turn to right or left, hitch him to a vehicle. A sulky is best, at first. Let him examine it, and smell it; draw it up behind him; run it back and forward before attaching him to it. If he is frightened, caress him and speak kindly until he is soothed.

Drive along the road slowly at first, to give him a chance to become familiar with the objects that look so strange to him. If he seems frightened at any object, do not use the whip, or he will be likely to associate the punishment with the thing he fears and be more fright-

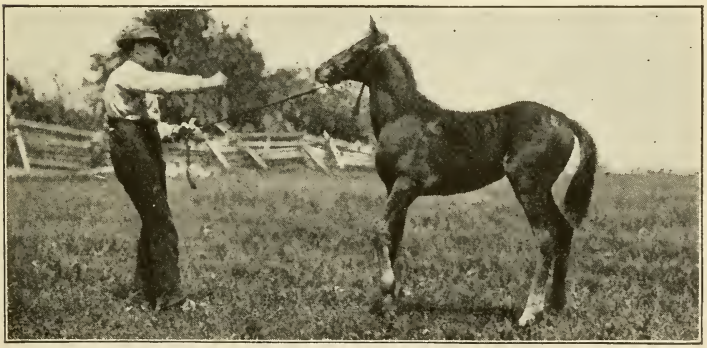
ened than ever the next time he sees it. Have him examine the object, and talk encouragingly to him.

There are many tricks you may teach your young horse. One boy taught a very young colt to step up with his fore feet on a box and reach for his oats, which were so placed that he must stretch his neck and bend down his head to eat them. This, performed so often while he was growing, gave a beautiful curve to his neck, which made him much admired.

A colt may easily be taught to shake hands. Tie a strap to the fore foot below the fetlock; then stand before him, and as you say, "Shake hands," pull on the strap until his foot is brought forward. Reward him then, and keep repeating until he has learned the lesson.

If you treat your horse well, he will be an intelligent, affectionate, faithful servant, and he will be quite as interesting when full grown as he was when a frisking, frolicsome colt.

M. B. Stevenson.



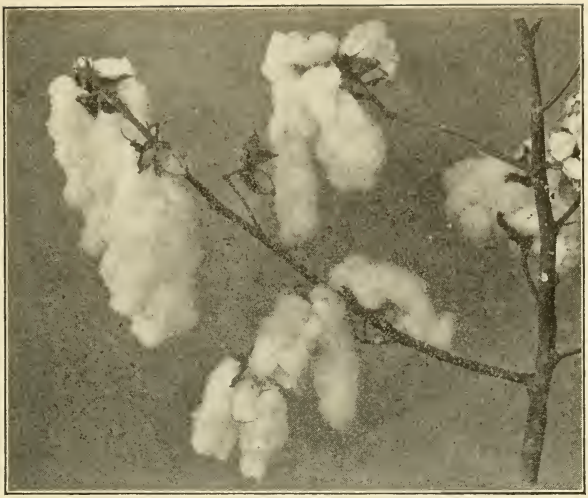
Training the colt.

SCYTHE SONG

Mowers, weary, and brown, and blithe,
What is the word, methinks ye know,
Endless overword that the Scythe
Sings to the blades of the grass below?
Scythes that swing in the grass and clover,
Something, still, they say as they pass;
What is the word that, over and over,
Sings the Scythe to the flowers and grass?

Hush, ah hush, the Scythes are saying,
Hush, and heed not, and fall asleep;
Hush, they say to the grasses swaying,
Hush, they sing to the clover deep.
Hush—'tis the lullaby Time is singing—
Hush, and heed not, for all things pass,
Hush, ah hush! and the Scythes are swinging
Over the clover, over the grass!

ANDREW LANG.



Cotton ready for picking.

THE COTTON-PLANT

The name *cotton* is simply another form of the French word *coton,* which is in turn derived from *kutn,* the Arabian name for cotton.

The cotton-plant belongs to the mallow family, and is closely related to the milkweed and the hollyhock. The plant itself is a shrub which grows from three to seven feet in height. It consists of a central stem, main branches, and smaller limbs which bear the flowers and fruit. The flower buds, on account of their shape, are known as *squares.* Within a few weeks after they appear, these squares unfold in the form of large white flowers; and when, a few days later, these flowers fall off, they leave be-

hind them small green pods, or bolls. After a month's growth, the bolls turn brown, and finally split open in from three to five divisions, each containing from thirty to fifty black seeds with lint or cotton attached to them. A single cotton-plant sometimes produces several hundred bolls.

The cotton grown in India and other countries of the East has a longer fibre than the varieties grown in the Southern States, and the lint can be easily separated from the seed. It is a perennial and needs to be replanted only once in seven years, while the cotton-plant of the Southern States is an annual and must be replanted every year. Nevertheless, in spite of greater difficulties in cultivation and manufacture, two thirds of the world's supply of cotton is produced in the Southern States.

Two different species of cotton are produced in the United States. The kind which is most commonly grown is known as American Upland; but along the coasts of South Carolina, Georgia, and Florida, a species known as Sea-island cotton is produced. Sea-island cotton commands a higher price than American Upland, because the lint is longer and finer; but the higher price is partly offset by the fact that it produces a smaller yield. Both these species include a large number of minor varieties.

Cotton will grow on almost any kind of land, but it thrives best in a clay-loam soil. Where the ground is ploughed in the fall, a cover crop of legumes should be planted, which must, of course, be ploughed under in the spring. Cotton is planted in ridges or beds, which are made as far apart as the cotton usually grows tall. In making these beds, the ground should be thoroughly pulverized to a depth of three or four inches. Planting

takes place as soon as the danger of frost is over, which is usually from March 15th, to May 1st, according to climate. About a bushel of seed is required per acre. The young shoots appear a few days after planting, but even before they come up, cultivation begins. From this time until the cotton matures, the ground must be constantly cultivated; but, owing to the fact that the root fibres of the cotton are only a few inches below the surface, cultivation must be shallow. When the shoots are well up, they are thinned by a hoe so as to leave intervals of twelve to twenty-four inches between plants, according to the nature of the soil.

The chief enemy of the cotton-plant is the Mexican boll-weevil. A weevil, it should be explained, is a kind of beetle; and the boll-weevil is so named because its larvæ, or "grubs," feed on the bolls of the cotton-plant. The Mexican boll-weevil, although it had been known in Mexico for many years, did not appear in the United States until the year 1892, and since then it has been gradually spreading over the cotton area. The weevil is about a quarter of an inch in length, and is reddish-brown in color. During the cold season the weevil hibernates—that is, it lives in a torpid state; but it reappears in spring about the time when the cotton-plant is setting its squares. Its eggs are laid in the squares, and the larvæ live on the young bolls. It is estimated that a single pair of weevils between June and November have about twelve million descendants. At present the loss due to the ravages of the cotton boll-weevil in the United States amounts to many million dollars every year.

The cotton crop is harvested some time between the

first of August and the middle of September, according to climate. Although a number of machines have been invented for picking cotton, none has yet been perfected, and the cotton is still picked by hand. After picking, the

Cotton ready to be shipped.

cotton is packed in bales weighing about five hundred pounds, and in this form it is shipped to the factory. The annual yield of cotton in the United States is over thirteen million bales.

After the lint is separated from the cotton-seed, the seed itself is subjected to various processes. The fine lint which still adheres to its surface is removed, and these fine fibres, which are known as *linters*, are used in the manufacture of coarse yarn, twine, cheap rope, lamp-

wicks, carpets, paper, and materials for upholstering. The hulls are then removed from the seed, packed into bales, and sold as feed for cattle. From the oil which is obtained from the kernels a great many well-known preparations are made, such as oleomargarine, butterine, cottolene, salad-oil, and soap. The cottonseed meal, or cottonseed cake, which is left after the oil is removed, is rich in protein and forms an excellent food for cattle; but it is also widely used as a fertilizer for the improvement of the soil. Not many years ago cottonseed was considered to be of no value, and the farmers found difficulty in disposing of it; but, needless to say, the use that is made of it with modern methods of manufacture adds greatly to the value of the cotton crop.

What a royal plant it is! The world waits in attendance on its growth; the shower that falls whispering on its leaves is heard around the world; the sun that shines on it is tempered by the prayers of all the people; the frost that chills it and the dew that descends from the stars are noted; and the trespass of a little worm upon its green leaf is more to England than the advance of the Russian army on her Asian outposts. It is gold from the instant it puts forth its tiny shoot.

HENRY W. GRADY.

THE TURNIP-HOEING MATCH

There are turnip hoers and turnip hoers, just as there are painters and painters. It was Tim Haley's ambition to be the first turnip hoer of his district, and for the last two seasons he had been quietly studying the art of Perkins, the foreman on his father's farm, who for some years had easily held the championship for the district. Keenly Tim had been observing Perkins's excellences and also his defects; secretly he had been developing a style of his own, and, all unnoted, he had tested his speed by that of Perkins by adopting the method of lazily loafing along and then catching up by a few minutes of whirlwind work. Tim felt in his soul the day of battle could not be delayed past this season; indeed, it might come any day. The very thought of it made his slight body quiver and his heart beat so quickly as almost to choke him.

To the turnip field hied Haley's men, Perkins and Webster leading the way, Tim and Cameron bringing up the rear.

"You promised to show me how to do it, Tim," said Cameron. "Remember I shall be very slow."

"Oh, shucks!" replied Tim. "Turnip-hoeing is as easy as rollin' off a log if yeh know how to do it."

"Exactly!" cried Cameron, "but that is what I don't. You might give me some pointers."

"Well, you must be able to hit what yeh aim at."

"Ah! that means a good eye and steady hand," said

Cameron. "Well, I can do billiards some and golf. What else?"

"Well, you mustn't be too careful, slash right in and don't give a rip."

"Ah! nerve, eh?" said Cameron. "Well, I have done some Rugby in my day—I know something of that. What else? This sounds good."

"Then you've got to leave only one turnip in one place and not a weed; and you mustn't leave any blanks. Dad gets hot over that."

"Indeed, one turnip in each place and not a weed," echoed Cameron. "Say! this business grows interesting. No blanks! Anything else?" he demanded.

"No, I guess not, only if yeh ever get into a race ye've got to keep goin' after you're clear tuckered out and never let on. You see, the other chap may be feelin' worse than you."

"By Jove, Tim! You're a born general!" exclaimed Cameron. "You will go some distance if you keep on in that line. Now as to racing, let me venture a word, for I have done a little in my time. Don't spurt too soon."

"Eh!" said Tim, all eagerness.

"Don't get into your racing stride too early in the day, especially if you are up against a stronger man. Wait till you know you can stay till the end, and then put your best licks in at the finish."

Tim pondered.

"You're right," he cried, a glad light in his eye and a touch of color in his pale cheek, and Cameron knew he was studying war.

The turnip field, let it be said for the enlightening of

city-bred folk, is laid out in a series of drills, a drill being a long ridge of earth some six inches in height, some eight inches broad on the top and twelve at the base. Upon each drill the seed has been sown in one continuous line from end to end of the field. When this seed has grown, each drill will discover a line of delicate green, this line being nothing less than a compact growth of young turnip plants with weeds more or less thickly interspersed. The operation of hoeing consists in the eliminating of the weeds and the superfluous turnip plants, in order that single plants, free from weeds, may be left some eight inches apart in unbroken line, extending the whole length of the drill. The artistic hoer, however, is not content with this. His artistic soul demands not only that single plants should stand in unbroken row from end to end along the drill top, but that the drill itself should be pared down on each side to the likeness of a house roof with a perfectly even ridge.

"Ever hoe turnips?" inquired Perkins.

"Never," said Cameron, "and I am afraid I won't make much of a fist at it."

"Well, you've come to a good place to learn, eh, Tim? We'll show him, won't we?"

Tim made no reply, but simply handed Cameron a hoe and picked up his own.

"Now, show me, Tim," said Cameron in a low voice, as Perkins and Webster set off on their drills.

"This is how you do it," replied Tim. "Click-click," forward and back went Tim's sharp, shining instrument, leaving a single plant standing shyly alone where had boldly bunched a score or more a moment before. "Click-

click-click," and the flat-topped drill stood free of weeds and superfluous turnip plants and trimmed to its proper roof-like appearance.

"I say!" exclaimed Cameron, "this is high art. I shall never reach your class, though, Tim."

"Oh, shucks!" said Tim. "Slash in, don't be afraid." Cameron slashed in. "Click-click," "click-click-click," when lo! a long blank space of drill looked up reproachfully at him.

"Oh, Tim! look at this mess," he said in disgust.

"Never mind!" said Tim. "Better stick one in, though. Blanks look bad at the *end* of the drill." So saying, he made a hole in Cameron's drill and with his hoe dug up a bunch of plants from another drill and patted them firmly into place, and, weeding out the unnecessary plants, left a single turnip in its proper place.

"Oh, come, that isn't so bad," said Cameron. "We can always fill up the blanks."

"Yes, but it takes time," replied Tim, evidently with the racing fever in his blood. Patiently Tim schooled his pupil throughout the forenoon, and before the dinner hour had come, Cameron was making what to Tim appeared satisfactory progress. It was greatly in Cameron's favor that he possessed a trained and true eye and a steady hand, and that he was quick in all his movements.

"You're doin' splendid," cried Tim, full of admiration.

"I say, Scotty!" said Perkins, coming up and casting a critical eye along Cameron's last drill, "you're going to make a turnip hoer all right."

"I've got a good teacher, you see," cried Cameron.

"You bet you have," said Perkins. "I taught Tim

myself, and in two or three years he'll be almost as good as I am, eh, Tim?"

"Huh!" grunted Tim contemptuously, but let it go at that.

"Perhaps you think you're that now, eh, Tim?" said Perkins, seizing the boy by the back of the neck and rubbing his hand over his hair in a manner perfectly maddening. "Don't you get too perky, young fellow."

Tim wriggled out of his grasp and kept silent. He was not yet ready with his challenge. All through the afternoon he stayed behind with Cameron, allowing the other two to help them out at the end of each drill, but as the day wore on there was less and less need of assistance for Cameron, for he was making rapid progress with his work, and Tim was able to do, not only his own drill, but almost half of Cameron's as well. By supper time Cameron was thoroughly done out. Never had a day seemed so long, never had he known that he possessed so many muscles in his back. The continuous stooping and the steady click-click of the hoe, together with the unceasing strain of hand and eye, and all this under the hot burning rays of a June sun, so exhausted his vitality that when the cow-bell rang for supper it seemed to him a sound more delightful than the strains of a Richter orchestra in a Beethoven symphony.

On the way back to the field after supper, Cameron observed that Tim was in a state of suppressed excitement, and it dawned upon him that the hour of his challenge of Perkins's supremacy as a turnip hoer was at hand.

"I say, Tim, boy!" he said earnestly, "listen to me. You are going to get after Perkins this evening, eh?"

An expert with the hoe.

"How did you know?" said Tim in surprise.

"Never mind! Now listen to me; I have raced myself some and I have trained men to race. Are you not too tired with your day's work?"

"Tired! Not a bit," said the gallant little soul scornfully.

"Well, all right. It's nice and cool and you can't hurt yourself much. Now, how many drills do you do after supper as a rule?"

"Down and up twice," said Tim.

"How many drills can you do at your top speed, your very top speed, remember?"

"About two drills, I guess," replied Tim, after a moment's thought.

"Now, listen to me!" said Cameron impressively. "Go quietly for two and a half drills, then let yourself out and go your best. And, listen! I have been watching you this afternoon. You have easily done once and a half what Perkins has done, and you are going to beat him out of his boots."

Tim gulped a moment or two, looked at his friend with glistening eyes, but said not a word. For the first two and a half drills Cameron exerted to the highest degree his conversational powers, with the twofold purpose of holding back Perkins and Webster and also of so occupying Tim's mind that he might forget for a time the approaching conflict, the strain of waiting for which he knew would be exhausting for the lad. But when the middle of the second last drill had been reached, Tim began unconsciously to quicken his speed.

"I say, Tim," called Cameron, "come here! Am I get-

ting these spaces too wide?" Tim came over to his side. "Now, Tim," said Cameron in a low voice, "wait a little longer; you can never wear him out. Your only chance is in speed. Wait till the last drill."

But Tim was not to be held back. Back he went to his place and with a rush brought his drill up even with Webster, passed him and, in a few moments, like a whirlwind passed Perkins and took the lead.

"Halloo, Timmy! where are you going?" asked Perkins in surprise.

"Home," said Tim proudly, "and I'll tell 'em you're comin'."

"All right, Timmy, my son!" replied Perkins with a laugh, "tell them you won't need a hot bath; I'm after you."

"Click-click, click-click-click" was Tim's only answer. It was a distinct challenge, and, while not openly breaking into racing speed, Perkins accepted it.

For some minutes Webster quickened his pace in an attempt to follow the leaders, but soon gave it up and fell back to help Cameron up with his drill, remarking: "I'm no fool. I'm not going to kill myself for any man. *They're* racing, not me."

"Will Tim win?" inquired Cameron.

"Naw! Not this year! Why, Perkins is the best man in the whole country at turnips. He took the Agricultural Society's prize two years ago."

"I believe Tim will beat him," said Cameron confidently, with his eyes upon the two in front.

"Beat nothing!" said Webster. "You just wait a bit, Perkins isn't letting himself out yet."

In a short time Tim finished his drill some distance ahead, and then, though it was quitting time, without a pause he swung into the next.

"Halloo, Timmy!" cried Perkins good-naturedly, "going to work all night, eh? Well, I'll just take a whirl out of you," and for the first time he frankly threw himself into his racing gait.

"Good boy, Tim!" called out Cameron, as Tim bore down upon them, still in the lead and going like a small steam-engine. "You're all right and going easy. Don't worry!"

But Perkins, putting on a great spurt, drew up within a hoe-handle length of Tim and there held his place.

"All right, Tim, my boy, you can hold him," cried Cameron, as the racers came down upon him.

"He can, eh?" replied Perkins. "I'll show him and you," and with an accession of speed he drew up on a level with Tim.

"Ah, ha, Timmy, my boy! We've got you where we want you, I guess," he exulted, and, with a whoop and still increasing his speed, he drew past the boy.

But Cameron, who was narrowly observing the combatants and their work, called out again:

"Don't worry, Tim, you're doing nice, clean work and doing it easily." The inference was obvious, and Perkins, who had been slashing wildly and leaving many blanks and weeds behind him, where neither blanks nor weeds should be, steadied down somewhat, and, taking more pains with his work, began to lose ground, while Tim, whose work was without flaw, moved again to the front place. There remained half a drill to be done and the

issue was still uncertain. With half the length of a hoe handle between them, the two clicked along at a furious pace. Tim's hat had fallen off. His face showed white and his breath was coming fast, but there was still some reserve in him. They were approaching the last quarter when, with a yell, Perkins threw himself again with a wild recklessness into his work, and again he gained upon Tim and passed him.

"Steady, Tim!" cried Cameron, who, with Webster, had given up their own work, it being, as the latter remarked, "quitting time, anyway," and were following up the racers. "Don't spoil your work, Tim!" continued Cameron. "Don't worry."

His words caught the boy at a critical moment, for Perkins's yell and his fresh exhibition of speed had shaken the lad's nerve. But Cameron's voice steadied him, and, quickly responding, Tim settled down again into his old style, while Perkins was still in the lead, but slashing wildly.

"Fine work, Tim," said Cameron quietly, "and you can do better yet." For a few paces he walked behind the boy, steadying him now and then with a quiet word; then, recognizing that the crisis of the struggle was at hand, and believing that the boy had still some reserve of speed and strength, he began to call on him.

"Come on, Tim! Quicker, quicker; come on, boy, you can do better!" His words, and his tone more than his words, were like a spur to the boy. From some secret source of supply he called up an unsuspected reserve of strength and speed, and, still keeping up his clean-cutting, finished style, foot by foot he drew away from Perkins,

who followed in the rear, slashing more wildly than ever. The race was practically won. Tim was well in the lead, and apparently gaining speed with every click of his hoe.

"Here, you fellows, what are yeh hashin' those turnips for?" It was Haley's voice, who, unperceived, had come into the field. Tim's reply was a letting out of his last ounce of strength in a perfect fury of endeavor.

"There's — no — hashin' — on — this — drill — dad!" he panted.

The sudden demand for careful work, however, at once lowered Perkins's rate of speed. He fell rapidly behind and, after a few moments of further struggle, threw down his hoe with a whoop and called out: "Quitting time, I guess." Perkins was white and panting, but Tim was still going at a racing pace and was just finishing his drill.

"Looks as if you've got him wound up so's he can't stop," remarked Haley. Then, turning to Perkins as if to change the subject, he added: "Looks to me as if that hay in the lower meadow is pretty nigh fit to cut. Guess we'd better not wait till next week. You best start Tim on that with the mower in the mornin'." Then, taking a survey of the heavens, he added: "Looks as if it might be a spell of good weather." Meantime Cameron had sauntered to the end of the drill where Tim stood leaning quietly on his hoe.

"Tim, you are a turnip hoer!" he said with warm admiration in his tone, "and what's more, Tim, you're a sport. I'd like to handle you in something big. You will make a man yet."

RALPH CONNOR.

A MIDSUMMER SONG

Oh, father's gone to market-town: he was up before the day,
And Jamie's after robins, and the man is making hay,
And whistling down the hollow goes the boy that minds the mill,
While mother from the kitchen door is calling with a will:
"Polly! Polly! The cows are in the corn!
Oh, where's Polly?"

From all the misty morning air there comes a summer sound,
A murmur as of waters, from skies and trees and ground.
The birds they sing upon the wing, the pigeons bill and coo;
And over hill and hollow rings again the loud halloo:
"Polly! Polly! The cows are in the corn!
Oh, where's Polly?"

Above the trees, the honey-bees swarm by with buzz and boom,
And in the field and garden a thousand blossoms bloom.
Within the farmer's meadow a brown-eyed daisy blows,
And down at the edge of the hollow a red and thorny rose.
But "Polly! Polly! The cows are in the corn!
Oh, where's Polly?"

How strange at such a time of day the mill should stop its clatter!
The farmer's wife is listening now, and wonders what's the matter.
Oh, wild the birds are singing in the wood and on the hill,
While whistling up the hollow goes the boy that minds the mill.
But "Polly! Polly! The cows are in the corn!
Oh, where's Polly?"

RICHARD WATSON GILDER.

A DAY ON THE FARM

Father came into our room where we were asleep, carrying a lamp. He woke us and we started up, looking blinkingly at the light. As soon as we were awake he said: "Boys, the cows are out; come quick, before they wander away."

Soon we are up and dressed and are going down-stairs. As we go down he tells us that he has just heard them go past his window, and that if we hurry they will not have time to wander far. So we boys hurriedly scratch a light and hunt for our boots. This is all done in much less time than it takes to tell it, and it is not more than a few seconds after we are dressed, till we are bursting out of the door into the darkness. Darkness—for as we came out I glanced at the clock and saw the time, 1.30, and then this night has been made especially dark by a thunderstorm which has just passed over.

We have a lantern and as we go we stop to peer into the darkness for the marauders. We cannot see them; so we pass on, out behind the barn, for they are probably in the meadow out there. Soon we are bursting through the tall, wet grass, up to our waists. We have gone but a few steps before our clothes are wet through, but that does not matter, for the cows are destroying the harvest—and then we cannot be much wetter than we are; so we keep on.

Soon we come upon a cow feeding upon the tall, lux-

uriant grass. As we come up to her she takes fright and begins to run in the wrong direction. We try to pass her, but soon she is up with the rest of the herd, and away they all go as fast as they can run. They are going straight for the field of oats, and they must be turned before they reach it. We race through the tall grass, out of breath and wet, oh, so wet! But the cows are having hard work, too, and they are slowing up, and presently they are turned and driven toward the barn. There they must be counted; and we find that six of them are gone. They must be brought in, at all costs, and out we go again. But we have gone but a short distance when the lantern goes out for lack of oil. We must have a light; so we go back to the house to fill the lantern. In a few minutes we are out again at the barn. Francis is ahead, and as we round the corner of the barn, he shouts: "Here they are!" We turn them in, and as they pass, we count them. There are only five—one is still missing. Out we go again for the third time, but we do not have to go far, for there she is, just discernible in the dim light. She is glad to join the others, and we turn her in.

After we have latched and barred the gate so that they cannot open it again, we hurry to the house, for we are cold and wet. There, after we have got a little warmer, it is proposed that we get something to eat, and we commence a hunt. We go down cellar and come upon a cake which was baked the day before. It looks good; so we cut it into three pieces and return to the kitchen. This much cake cannot be eaten without some milk; and Francis goes out to the can after some. Soon we are enjoying the pleasures of a midnight lunch. Oh! how appetizing!

One who has never shared in such a meal cannot fully imagine the keen enjoyment of it. Our lunch finished, we are off to bed again, having been up just one hour. Soon we are asleep, and it seems we have been in bed but a minute or two when father comes in to call us again.

It is half past four, and now the real day's work begins. The sun has not yet risen as we go out; but the birds are already singing. The storm of the night has passed away, and few traces of it are discernible. But the cows must be milked before breakfast, and so we are off for the lot. There are eight apiece for Francis and me, and seven for Paul. This will take us about an hour. The cows are sleepy after their ramble in the night, and they have to be urged before they will get up. Soon we are busy milking, and we are all done and have the horses fed by six o'clock. Then a good wash in the clear, cold water pumped fresh from the well, and we are ready for breakfast.

When breakfast is over, father sends us out to mow—two with mowing-machines and one with a scythe, the latter to mow the fence corners and the patches around the trees, which the mower cannot cut. Paul and I harness the horses to the machines while Francis is grinding his scythe. Our cutter-bars have been sharpened, and we all start out together. Having arrived at the field, which is about a quarter of a mile from the house, we let down the cutter-bars and oil the machines, and then, after throwing the machine into gear, we are ready to begin.

We start the horses, and the machines go jiggling merrily through the grass. As the knives jump quickly back and forth, the butt of the stalk is jerked suddenly one way and then the other, and then it topples over. It is

certainly a sight to make a philosopher ponder, to see so many stalks being cut down.

After we have mowed two swaths around the field, one machine continues to go around while the other mows the back swath so that the fence corners can be cut. This cutting the back swath is usually the difficult job, for there are so many ant-hills and woodchuck holes along the fence, and then there is also the danger of catching the point of the bar in the fence. After I have gone around the back swath I follow Paul around on the piece. We have to stop once in a while to clear out the bar. A mouse nest gets on the bar and clogs the machine, but after throwing the machine out of gear we remove the obstruction and pass on.

As Paul stops at the corner to oil, I come up to him, and he tells me there is a yellow-jacket's nest on the other side of the field. We know what to expect if they are stirred up. It is bad enough if they sting you, but it is far worse if they alight on the horses, for they would run away, and that is not a desirable accident.

When we have come around to the place, we stop our machines and go ahead to explore. We find the nest—a paper ball about as large as a person's head—hanging on a brier, which stands just in the edge of the uncut grass. There is a solitary wasp crawling around on the outside, as a sort of guardsman, I suppose. But we know very well that the inside is full of them. We wait a moment and this lone scout goes inside, I suppose to report that "all's well." As he disappears, Paul hastily pulls out his knife and, catching the brier in his left hand, he hurriedly cuts it off and gives it a throw far out into the cut

grass. It is all done so quickly that no wasp has time to get out, but as the nest goes through the air, several manage to scramble out, and go buzzing madly round and round. They are too mad to see anything except their nest, and

The noontime pause.

they buzz fiercely around it in search of an enemy. We hastily mount our machines and pass on, and by the time we are come around again they have all alighted on their nest, and are crawling about, trying to fathom the mystery.

We leave them undisturbed and continue our work. As we go up one side of the field, a young woodchuck runs clumsily out of the grass over the mown hay and into his hole in the fence corner. He has so much of a start

that we cannot catch him, and we pass on—though, if we could have caught him we would probably have used his hide "to generate horse-power."

It is getting pretty hot by this time, and the jug of water, which we have in the fence corner in the shade, is pretty warm, though I suppose it is still "as wet as any." We make a few more rounds and then stop to oil up. As we are doing so, we catch the sound of the dinner-bell telling us to come to the house. We unhitch the horses and start for the house, for we are all hungry—horses and men. We water and feed the horses before we eat our own dinner. Another refreshing wash in the cold water, and we are ready to eat.

After dinner we go out and lie under the shade of the maple trees to rest. An hour is given for dinner, and at one o'clock we have started for the field again.

We have been going around twenty acres and the piece seems nearly as large as in the morning, though it is perhaps only half done. The work in the afternoon is more tiresome, as the sun is warm and there is no breeze stirring. The horses walk very slowly, and it seems as if no amount of urging will make them go faster. The warm sun makes one very drowsy, and oh, how good it would be if one could but lie in the shade of one of those trees and go to sleep! But it is haying time, and there must be no sleep from four-thirty to eight, inclusive.

The afternoon wears away slowly; you hear nothing but the rattle of the machines, and see nothing but the myriad of timothy stalks falling. But suddenly a rabbit jumps from in front of your cutter-bar. He pops out of the standing grass and goes bobbing along over the cut

hay to the pasture. This reminds us that the field is nearly done, for the rabbits always work toward the centre of the uncut grass, until there remains only a narrow strip to be mowed. Then they jump out and go bounding along over the grass till they find some place to hide. Sometimes we find a nest of young rabbits, which are either too scared or too young to run, and then the machine must be stopped till they are removed.

The piece grows rapidly smaller, and soon there remains but one swath to cut. We finish this, and as we are raising our bars we hear the supper-bell. As she hears it, one of the horses whinnies in a sort of satisfied way, for she is a wise old creature, and she knows that the bell tells us to quit for the night. After reaching the house, we put the horses in the barn and prepare for supper. Supper over, the cows must be milked again and the horses tended. We are through by eight o'clock, and we go back to the house and wash up again.

The day's work is done, and it has been a long one—fifteen hours and a half. And any one who puts in that much time on manual labor will be tired.

URBAN LAVERY.

God made the country and man made the town.
What wonder then that health and virtue, gifts
That can alone make sweet the bitter draught
That life holds out to all, should most abound
And least be threatened in the fields and groves.

COWPER.

EVENING AT THE FARM

Over the hill the farm boy goes.
His shadow lengthens along the land,
A giant staff in a giant hand;
In the poplar tree, above the spring,
The katydid begins to sing;
The early dews are falling;—
Into the stone-heap darts the mink;
The swallows skim the river's brink;
And home to the woodland fly the crows,
When over the hill the farm boy goes,
Cheerily calling:
"Co', boss! co', boss! co'! co'! co'!"
Farther, farther, over the hill,
Faintly calling, calling still,
"Co', boss! co', boss! co'! co'!"

Into the yard the farmer goes,
With grateful heart, at the close of day:
Harness and chain are hung away;

In the wagon-shed stand yoke and plough,
The straw's in the stack, the hay in the mow,
The cooling dews are falling;—
The friendly sheep his welcome bleat,
The pigs come grunting to his feet,
And the whinnying mare her master knows,
When into the yard the farmer goes,
His cattle calling:
"Co', boss! co', boss! co'! co'! co'!"
While still the cow-boy, far away,
Goes seeking those that have gone astray:
"Co', boss! co', boss! co'! co'!"

Now to her task the milkmaid goes.
The cattle come crowding through the gate,
Lowing, pushing, little and great;
About the trough, by the farmyard pump,
The frolicsome yearlings frisk and jump,
While the pleasant dews are falling;—
The new milch heifer is quick and shy,
But the old cow waits with tranquil eye,
And the white stream into the bright pail flows,
When to her task the milkmaid goes,
Soothingly calling:
"So, boss! so, boss! so! so! so!"
The cheerful milkmaid takes her stool,
And sits and milks in the twilight cool,
Saying: "So, boss! so, boss! so! so!"

To supper at last the farmer goes.
The apples are pared, the paper read,

The stories are told, then all to bed.
Without, the crickets' ceaseless song
Makes shrill the silence all night long;
The heavy dews are falling.
The housewife's hand has turned the lock;
Drowsily ticks the kitchen clock;
The household sinks to deep repose,
But still in sleep the farm boy goes
Singing, calling:
"Co', boss! co', boss! co'! co'! co'!"
And oft the milkmaid, in her dreams,
Drums in the pail with the flashing streams,
Murmuring: "So, boss! so!"

JOHN T. TROWBRIDGE.

Now to her task the milkmaid goes.

CLEAN HOME MILK

Boys that do the milking on the farm do not realize how filthy the milk often is when it gets to the house. Take a milk-pail from the shelf; go down to the cow barn. There is the cow. Throw her down an armful of hay to chew on while you milk, brush off the stool, rub off the cow's bag with a wisp of hay if she is especially dirty—never mind your hands or the open pail—throw a stream of milk onto each palm and begin. Is there a little hay and dust in the pail? Never mind; it will strain out. When you get through, set the pail down while you drive the cows out to pasture. To be sure, they will raise a lot of cow-stable dust, and the smell is pretty bad in there; but if you set it outside the pigs would get into it. It is nearly school time and you have other chores to do. Take it to the house and strain it. Mother always doubles the strainer cloth, but it takes an awful time for it to run through that way. There! You said the dirt would strain out, and look at it there in the cloth!

This is a cold-hearted picture of one of the chores the farm boy particularly hates. Compare each item with your own methods and improve on each. Home milk is not always clean milk.

The boy that milks ought to do a better job than this. He ought to bring clean milk into the house. How shall he do it? A clean place to milk, a clean cow, a clean boy, and a sanitary milk-pail; these four things are within the reach of every farm that can afford a cow.

I have seen a good many patent milk-pails, mostly in

stores, seldom on the farm. The sanitary milk-pails keep the dirt out, they don't strain it out. Here is one described by the man who invented it for his own use. This pail is tin, and holds ten quarts or so. On one side is a spout two and a half inches in diameter and three inches

Down in the pasture.

long. The spout has a tin cover like a baking-powder-can cover. To keep the dirt out of the pail the man bought a tin pan, just the size to fit tight into the top of the pail. Just above the bottom of the pan on one side he had a tinner cut eight or ten small holes, like a colander. Scald the pail, double the strainer cloth and lay it across the top of the pail. Press the pan down on the cloth till it goes down into the pail tight, taking care that the edge of the cloth comes up all round. Do all this at the house. With this pail a clean milker can milk a clean cow in a sweet-smelling place and get clean milk. This may look

like a pound of prevention, but think of the tons of cure it will save.

There are many boys delivering milk in towns and cities. Most of them do their part well. But I believe they would like to do it better. Driving from one house to another is pretty dull business for a live boy, and unless he has something to think about his mind wanders. Why not put some thought on the very business he is engaged in? Does he know what milk is—that children's lives depend upon the care he gives it? Does he know that dirt in ice and dust from streets may be deadly if they get into milk? If dust gets into that little puddle that ought not to be on top of the bottles, does he wipe it off with a dirty rag, ignorant of the danger? If he thought of these things and studied out ingenious ways of keeping his bottles free from dust, life would no longer be dull but interesting. He would be well started toward good citizenship.

MARY ROGERS MILLER.

The noonday rest.

IN THE PLUM YARD

My plum yard is not all a plum yard, but is a chicken-yard as well. It is a lively place, where I like to sit in the shade of an apple tree that looks over the hedge patronizingly at its nephews, the plums. The old hens in the coop, when they see me, cluck for me to bring them dainties, and the fluffy things called chickens step on my toes confidingly. These two economies go on nicely together—hens and plums; and I advise you in all horticulture to find out the things that make and match, for there are some things that will not go together at all. A butternut tree hates a potato hill and likes a wild blackberry. Plant your plum trees in the chicken-yard, or plant your chickens in the plum yard, as you please, and you will find that it will work to a dot. It is a secret between you and me that there is not one fruit under the sun that a hen likes better than a gooseberry. It will snip off every one before the berries are half-grown; so you will plant your gooseberries on the other side of the fence.

Plum trees will grow close together and bear all the better for it; so you can have a number of them on a small space. But if they bear full, you had better pull off one third or one half of the fruit, so that the rest will be of good size and flavor. This is especially necessary if you are growing for the market.

Almost all other fruits carry more chances of being damaged or devoured by birds or insects than the plum, and other fruits involve you in a longer fight. You are

never sure of your strawberry crop until you eat it, and, as for cherries, they must be covered with mosquito netting till they are fit to eat. But the plum is so sharply assailed by its one particular enemy that you may lose the whole crop unless you know how to care for it. I was told in Florida that plums would grow there, but that you could get no fruit. The people had simply not learned the knack of catching the plum-curculio. It takes about ten or twelve days of jarring, and after that we can, as a rule, enjoy seeing our plums swell out and sweeten. The way we do this is to make a huge sheet, big enough to cover the ground under a large plum tree. This we slit down to the middle, and spread it out so that the tree stands in the centre. We make a rammer about eight feet long, of light wood, but strong, and we pad the end till it is sure not to bruise the tree. With this we ram or jar—not shake—the branch, and the insects fall on the sheet. The curculio curls up and plays possum. You must know him at sight, catch him quickly, and crush him. His shell is hard, and needs a stout pinch. If you have a pet hen that will trot around with you, you can feed them to her; but be quick or the curculio will spread his wings and fly away.

There will still be quite a percentage of plums that will be stung. The jarring of the trees should take place twice a day—about seven in the morning and four at night; but in spite of all precautions the stung fruits will soon drop, and should be promptly gathered before the grub enters the soil. If he gets into the ground he will come out next year a full-grown insect, ripe for mischief.

The plum tree is subject to what is called the knot—

a fungus disease, that causes a swelling and frequently destroys limbs or whole trees. Take a sharp knife and cut the knot and adjacent wood, as soon as the swelling appears. As a rule, you can entirely master this disease if you are prompt and thorough. You may, however, have to fight another fungus disease, a "blight" which appears in August or September, generally just after the fruit is picked. This blight destroys the leaves and does a great deal of damage to next year's crop. Prevention is better than cure in this case, and in order to prevent the blight from attacking the trees, they should be sprayed with Bordeaux mixture two or three times during the season—beginning in May. The spray will do no harm, even if there be no danger from the blight.

E. P. Powell.

MINE HOST

My host was a bountiful apple tree;
He gave me shelter and nourished me
With the best of fare all fresh and free.

And light-winged guests came not a few,
To his leafy inn, and sipped the dew,
And sang their best songs ere they flew.

I slept at night on a downy bed
Of moss, and my host benignly spread
His own cool shadow over my head.

Thomas Westwood.

A BOY'S SONG

Where the pools are bright and deep,
Where the gray trout lies asleep,
Up the river and o'er the lea,
That's the way for Billy and me.

Where the blackbird sings the latest,
Where the hawthorn blooms the sweetest,
Where the nestlings chirp and flee,
That's the way for Billy and me.

Where the mowers mow the cleanest,
Where the hay lies thick and greenest;
There to trace the homeward bee,
That's the way for Billy and me.

Where the hazel bank is steepest,
Where the shadow lies the deepest,
Where the clustering nuts fall free,
That's the way for Billy and me.

But this I know, I love to play,
Through the meadow, among the hay;
Up the water and o'er the lea,
That's the way for Billy and me.

JAMES HOGG.

CERES AND PROSERPINA

In ancient times, when the harvests were abundant people believed that it was because Ceres, the goddess of the harvests, had given rain and sunshine to the earth. And when the cold and rainy or snowy season came, and the grass became withered, and the flowers ceased to bloom, it was because Ceres was gloomy and sad.

Ceres, according to the old story, had one daughter, a lovely child named Proserpina, whose presence made the grass greener, the flowers gayer, and the sunshine brighter over all the earth. And when Ceres was absent on her tasks of caring for the harvests, Proserpina wandered amid the flowers in the fields or played with the sea-nymphs in the sand or among the rocks along the shore. One day when Proserpina and her companions were gathering flowers their happy laughter attracted the attention of the god Pluto, who was riding by in his chariot.

Pluto was the god of darkness, and his palace was deep down in the underworld, where the light of day never shone. He was a gloomy fellow and led a lonely life in his underground palace; for, although he wooed many of the goddesses, none of them was willing to share his throne in this shadowy realm. And now when he heard the girlish laughter of Proserpina, he stopped his chariot and looked around to see whence it came. Peering through the bushes by the wayside, he saw Proserpina, and was so charmed with her beauty that he resolved at once to carry her off to the underworld to be his queen. So he

seized her, carried her by force to his chariot, and sped his horses into a fierce gallop; and, in spite of her struggles and screams, poor Proserpina was soon carried far away from her native fields and her home.

At length Pluto came to a great river, which was swollen to an angry flood so as to bar his course; but, nothing daunted, he struck the ground with his great two-pronged spear, and straightway there appeared in the earth a yawning chasm which opened at once into the underworld, and through this the horses and chariot disappeared.

Upon her return home, Ceres was greatly grieved to find that Proserpina was not there. She went forth to the fields to search for her, calling for her everywhere, and inquiring of all whom she met; but no one had seen or heard anything of the lost Proserpina. When night came on, she lighted a torch at the flames of Mount Ætna and continued her search through the hours of darkness—but all in vain. Day after day passed, but still the disconsolate Ceres would not be comforted. She no longer cared for the grass or the flowers or the sunshine. The harvests were neglected, the grass withered, the birds ceased to sing, the rains fell continuously, and man and beast alike suffered sorely for the want of warmth and light and food.

At length, when Ceres, worn out by her long search, was one day seated by a fountain which sprang from the depths of the earth, she thought she heard a gentle voice, and, listening more closely to the murmur of the fountain, she at length obtained tidings of her lost child; for the fountain, passing up through the realms of Pluto, had

caught a glimpse of Proserpina in the palace of the King, and, taking pity on Ceres, in gentle accents she told her the story of what she had seen.

Ceres, you may be sure, was glad to learn at length where her daughter was and that she was still alive, though she had little hope of being able to rescue her from the power of Pluto. Nevertheless, she determined to try to find her, and at once set out, sadly enough, in search of the entrance to Pluto's underground realm.

In the meantime Proserpina had grown somewhat accustomed to the darkness of Pluto's palace. After all, it was not wholly a dismal place, for there was an abundance of gold and silver and diamonds and all manner of precious stones; and Pluto, though stern and forbidding and gloomy to outward appearance, was not unkind at heart, and did his best to make Proserpina happy and to lead her to forget her life amid the flowers and sunshine of the earth above.

When Proserpina had first entered the palace of Pluto she would not be consoled, and although the most tempting dainties were set before her she refused to eat or drink until she should be restored to her mother, Ceres. And it was well that she did so, for it had been decreed by the gods that whosoever ate or drank in the realms of Pluto should never be permitted to return to the upper world. None knew this better than Pluto himself, and in order to tempt Proserpina to break her fast he ordered his servants to search the earth for the daintiest fruits they could find and to place them before her. But although they searched far and wide they could find nothing but a single withered pomegranate.

In the meantime the earth was suffering from famine, and the children were crying for food; and fathers and mothers begged Jupiter to have pity on their sufferings and to restore to Ceres her lost child, Proserpina, so that she might once more smile upon the earth and make it bright with flowers and rich with the golden harvest of grain. At length Jupiter grew weary of their pleadings, and consented to her return; and Mercury, the fleet-footed messenger of the gods, was sent to the palace of Pluto to bring her up from the underworld and restore her to her mother, Ceres.

When Mercury reached the palace of Pluto he found that he had arrived none too soon; for Proserpina, unable longer to resist the pangs of hunger, had rashly tasted the withered pomegranate, and, it was found, had eaten some of the seeds. Jupiter, although he was King of heaven, could not interfere when once his laws were broken; and so for every seed she had eaten, Proserpina was condemned to spend one month of each year in the palace of King Pluto. And this is how it comes that for full six months every year Proserpina is forced to return to the underworld. Then the good mother, Ceres, mourns once again for the lost Proserpina, and the earth brings forth no fruit. But when Proserpina returns, the skies become blue and sunny, the songs of the birds are heard on every hand, and the earth is once more white with the promise of an abundant harvest, with which Ceres in her gladness is ready to bless the earth.

PART II

AUTUMN

THE COUNTRY BOY'S INHERITANCE

"I give and bequeath to boys, jointly and severally, all useful idle fields and commons where ball may be played; all pleasant waters where one may swim; all snow-clad hills where one may coast; and all streams and ponds where one may fish, or where, when grim winter comes, one may skate; to have and to hold these same for the period of their boyhood; and all meadows with the clover blossoms and butterflies thereof; the woods with their appurtenances, the squirrels, and the birds, and all echoes and strange noises, and all distant places which may be visited, together with the adventures there found."

CHARLES LOUNSBERRY.

I'D LIKE TO GO

It seems to me I'd like to go
Where bells don't ring, or whistles blow,
Nor clocks don't strike, nor gongs don't sound,
And I'd have stillness all around—

Not real stillness, but just the trees'
Low whispering, or the hum of bees,
Or brooks' faint babbling over stones
In strangely softly tangled tones;

Or maybe the cricket or katydid,
Or the songs of birds in the hedges hid
Or just some such sweet sounds as these
To fill a tired heart with ease.

If 'tweren't for sight and sound and smell,
I'd like the city pretty well;
But when it comes to getting rest
I like the country lots the best.

Sometimes it seems to me I must
Just quit the city's din and dust,
And get out where the sky is blue—
And, say, now, how does it seem to you?

EUGENE FIELD.

A country boy and his friends.

THE COUNTRY BOY

To be friends with animals is an education in itself, and a boy who does not know a horse, a dog, a cat, a pig, chickens—the barn-yard family—and the woodland family —rabbits, chipmunks, coons, and wildcats, too—all around, through, and under, lacks something essential. It is helpful to a boy to know that he can control so big an animal as a horse just by the effort of his will. The boy that has not a dog friend is to be pitied. A dog paraded on the end of a string is no real companion; a dog friend is one with whom you have trod the leaf-strewn paths of the wood, starting with him at every woodland stir and scurry, every scent and footprint. A boy learns quickness when he borrows in this way a dog's ears and nose. Be sorry, too, for the boy who does not know a robin's egg from a wren's, or a swallow's nest from an oriole's; who cannot tell the call of the cat-bird from that of the whip-poor-will.

To be a friend of the trees—to know the birch and the beech, the ash and the aspen, the oak and the elm, not because you have learned to identify them in the park from pictures of their leaves in a book, but because you have grown up with certain oaks and elms—that is something worth while.

A country boy's sports, too, help in his making. What is there comparable with the journey made by the crowd on Saturday mornings in summer, across the field (and how the stubble of the wheat hurts your bare feet!) through the small woods to the swimming pond for a good splash, and contests in speed and endurance, races in water and out, unencumbered by garments. Then the silent, crafty mornings spent with a rough rod and no reel, at the creek-side, in combat with finny antagonists—the fishing. Those hours add something to the country boy's equipment, a healthy enjoyment of thoughtful, contemplative hours, that stand and have stood him in good stead—something that the city boy in the rush and rattle can never have.

VIVIAN BURNETT.

Off for the fishing pool.

ACID SOILS

Buy five cents' worth of blue litmus paper at the drug store. When you reach home, dig up a spadeful of moist earth from your garden; break a lump in two, place a piece of the litmus paper between the parts of the broken lump and press them together firmly. Leave the litmus paper there for twenty or thirty minutes. If at the end of that time you find that the paper has become pinkish or reddish in color, you may be sure that the soil is acid, or "sour."

When the soil is sour you cannot get a good crop of clover or of any kind of legume from it, because the bacteria that live on the roots of the clover and supply it with food do not thrive in acid soils; and if the bacteria do not work properly, they do not supply a sufficient amount of nitrogen to enrich the soil. If, then, you find that the blue litmus paper turns red, it is a sign that your soil is in a poor condition and will not produce the best crops.

The way to overcome the sourness in the soil is to supply it with a proper amount of lime; for lime is what is known as an *alkali*, which counteracts the effects of acids. When vegetable matter decays in the soil, a certain amount of acid is produced, and if the soil does not contain enough lime to overcome it, the amount of acid continues to increase. Some soils contain so much lime that they are not likely to become sour; but in the case of other soils,

it is necessary to add a fresh supply of lime every few years to keep them in proper condition.

But besides the fact that lime counteracts the effect of the acid in the soil, there is another reason why the soil should be well limed. As we have already seen, the three plant-foods in which the soil is most likely to be lacking are nitrogen, potassium, and phosphorus. Now it is often the case that although there is an abundance of potash and phosphorus in the soil, they are "locked up" with other things, so that the plant cannot get at them. But when lime is present in the soil, it attacks these combinations and sets a certain amount of potash and phosphorus free, so that the plant may use them. Lime itself is used by plants only in small quantities, but it acts as a fertilizer both by making it possible for the soil bacteria to manufacture nitrogen, and by setting potash and phosphorus free.

When the farmer finds that the soil in a certain part of his farm is not producing so well as he thinks it should, it is worth his while to try the effect of liming a strip of his field to see whether it improves his crops. But if the soil is acid, the blue litmus paper will tell the tale; and if the farmer's boy wishes to be a help to his father, he will be on the watch for sheep-sorrel (or sour-grass) and horse-tail, which are two of the weeds that grow most commonly in acid soils.

An old log country school-house.

A FIELD OF MUSTARD

It was an old log country school-house, as I knew it, situated at the cross-roads a mile east of Martin's Corners. The school-yard was full of stumps, and a broken picket fence separated it from a bush lot behind. Directly across from the school was a field of five acres or so, which formed the corner of an ill-kept, broken-down farm. In the season of which I write, a crop of oats had been sown in the field, but when the time for harvest came, there was little oats to be seen. The whole field was a brilliant yellow, and one might have imagined that it had been sown by some perverse enemy with the object of producing a beautiful harvest of wild mustard. As a matter of fact, the mustard was so plentiful and the oats so scarce that the

farmer in charge—it was a rented farm—did not think it worth while to cut the crop; and so it happened that in the middle of August when we returned to school we found the crop of mustard still standing and rapidly ripening.

It happened that we had for teacher that year a young fellow by the name of Morton, the son of a well-to-do farmer who lived only half a mile from the school.

"Boys," said he to us the Friday afternoon after school opened, "if you are willing to help me after hours, I'm going to give you a few lessons in agriculture. You see that field of mustard. Mr. Armstrong, who owns this farm, has agreed to give us half the crops off that field for the next three years provided we agree to work the field and kill that mustard. Let us see—we want a new baseball outfit for this school. If we can make five dollars out of the field we'll get that, and if we make a hundred we'll get——"

"A phonograph," suggested Leslie Perkins.

Of course, we all fell in with this idea, but Morton only smiled. "I said, '*If* we make a hundred,' remember. What do you say, then? Will you help?"

Help! There wasn't one of us who wouldn't have gone over that fence with a handspring, and begun pulling mustard on the spot. But Morton wisely held us in.

"Before we begin," he urged, "we must learn all about mustard—what kind of plant it is, how it grows, what its seeds are like, when it comes to seed, and how we can kill it. Leslie, bring me over a dozen mustard plants and we'll begin right now."

Those were the most interesting lessons in nature study,

agriculture, or whatever you choose to call it, that I ever expect to have. On this particular afternoon we sat down by the roadside, each with a mustard stalk in hand, and under Morton's directions we examined the whole plant—the roots, the hairy stem, the branches, the leaves and the flowers, and finally the seed-pods and seeds; for flowers and seeds are found on the plant at the same time. Before we looked at the seeds Morton asked us to guess how many seeds each plant would produce, and our guesses ran all the way from fifty to five hundred.

"Let me give you a question in arithmetic," said Morton. "Suppose I had the whole crop of seeds from Percy's plant here, and suppose I had a machine that would drop one seed every three feet, I should have to go about nine miles before the seeds were all gone. Now, how many seeds are there?"

We figured it out then and there, and found that the answer was about fifteen thousand seeds.

"And now," said Morton, "I have a harder question for you to work out at home. Supposing that there are ten mustard plants in every square foot of that five-acre field, how many plants are there? And if all this year's seeds grow, how many plants will there be next year?"

On Monday morning when we reached school we found, to our surprise, that Morton had been over on Saturday with his binder and had cut and bound the mustard and oats together. That evening we shocked up the sheaves in piles in different parts of the field, and a few days later, when they had time to dry out, we made bonfires of the piles.

The next Friday afternoon we had another lesson, and

this time we talked about the way the seeds of the mustard could be killed. The first thing Morton tried to make plain to us was the difference between an annual, such as mustard, and the other kinds of weeds known as biennials and perennials. "Since mustard is an annual," he explained to us, "we must make sure to kill every mustard plant that comes up—and we know that when once the plant is cut down it will not trouble us again, like the thistle and the burdock."

"Then all we have to do," said Leslie, "is to kill all the mustard plants that come up next spring, isn't it?"

Morton looked at Leslie with something of a smile. "The trouble is," he explained, "that all the seeds don't come up at the same time. A mustard seed won't grow unless it gets air and moisture and sunshine, so that only the seeds that are close to the surface will grow. Suppose you kill them. Just as soon as you begin to plough the ground you are sure to bring thousands more to the surface, and there you have a fresh crop of mustard plants. Over in that field, there are mustard seeds in the ground for a foot deep, and if you were to leave that ground for twenty years without ploughing, and then stir up the soil, some of those same seeds would begin to grow."

By this time we began to see that we had a big task ahead of us; but this did not dampen our enthusiasm.

"The only thing for us to do," continued Morton, "is to try to make all these mustard seeds grow, and then kill the plants before they come to flower. That means that we have to keep turning the soil up, deeper and deeper, so as to bring fresh seeds to the surface, until all the seeds have sprouted."

"When shall be begin?" asked Lloyd Jones. "Next spring?"

"No, my boy," replied Morton. "We'll begin right now."

And then he explained to us his plan of operations. To go over the field to a depth of two or three inches only with a gang-plough and harrow, wait till the seeds had sprouted, cultivate and harrow again, and perhaps again, and plough once more before the end of the season. As for us, it was our business to go over the fence corners and clear out all the weeds. Then in the next spring and summer our proper work would come; for, according to Morton's plan, the field was to be planted with corn, which we were to keep clean by cultivating and hoeing.

There is no need to go into the minute details of our year's struggle with the mustard. The ground was ploughed and harrowed and cultivated, and cultivated and harrowed and ploughed. The corn was planted and cultivated and hoed, and cultivated and hoed again, in a way that only twelve strong boys can hoe it. If it had not been for Morton we should have given up more than once in despair; but he kept us at it, and worked with us—in our hoeing matches he always counted for two—so that even in the holiday season we kept at the good work; and even if our corn didn't grow that year as well as might have been expected, we had a good deal of healthful exercise and we enjoyed our work. And, last but not least, after the seed corn and other expenses were paid we had enough to buy our baseball outfit and a snug nest-egg to go toward the coveted phonograph.

That fall the process of ploughing, harrowing, and cul-

tivating was continued, and in the spring we put in a crop of wheat with clover. Our work this summer was not so hard, since it consisted simply in going through the wheat and pulling out the mustard by hand;* and we did it thoroughly. Our grain crop was good, and netted us easily another sixty dollars.

By the end of the second year some of the older boys had left the school, but those of us that were left watched the clover-field closely for any mustard plants that might appear; and in the fall when the field was ploughed under again, Morton went over it several times as usual with the harrow to kill any fresh plants that might come up. We all knew, of course, that, even after our three years' hard work, the field would need careful watching for some years to come; but we had filled our contract to the satisfaction of Mr. Armstrong, and at the same time had earned, and more than earned, our school phonograph; and, best of all, we had learned many useful lessons of perseverance and hard work, which are among the most important subjects on the farmers' out-of-doors curriculum.

A man was once walking with a farmer through a beautiful field, when he happened to see a tall thistle on the other side of the fence. In a second, over the fence he jumped, and cut it off close to the ground. "Is that your field?" asked his companion. "Oh, no!" said the farmer; "bad weeds do not care much for fences, and if I should leave that thistle to blossom in my neighbor's field I should soon have plenty in my own."

* Mustard and many other weeds in the grain-field may be destroyed by spraying with a solution of iron sulphate. The solution takes the moisture from the weeds but does not injure the grain.

There stands a field of golden sheaves.

HARVEST SONG

There stands a field of golden sheaves,
To the very edge of the world it heaves.
Grind, mill, grind!

The wind falls in the wide land,
Many mills at the sky-edge stand.
Grind, mill, grind!

There comes a sunset dark and red,
Many poor people are crying for bread,
Grind, mill, grind!

The night holds in its lap the storm,
To-morrow the men to work will swarm.
Grind, mill, grind.

Clean are the fields swept, never again
A man shall cry in hunger-pain.
Grind, mill, grind!

RICHARD DEHMEL (Trans., Jethro Bithell).

THE BOY WHO MADE THE REAPER

The first successful reaping-machine made in America was invented by a boy named Cyrus H. McCormick. His father owned what was a very large farm in Virginia, and Cyrus helped in the fields. His father had a small blacksmith shop beside the house, in which he had a forge and all the tools that blacksmiths use. Cyrus liked to watch his father in the shop, and he liked to play with the tools when he could get his father's consent.

As he grew older he learned to use the various tools, and finally his father let him do some of the work in the shop. Cyrus took to this kind of work and became quite expert in making things.

In those days, you know, they cut the grain with a scythe and a cradle. The cradle consisted of several long wooden teeth on the back of the scythe. On these teeth the grain was caught, and then with a sudden shake of the handle the grain was deposited on the ground in bunches instead of lying in rows.

This was hard work; so, naturally, Cyrus tried to think of a way to make a machine that would do it by horse-power. Cyrus's father had been thinking along the same lines, and had tried to make a machine; but it wouldn't work. When the father finally gave it up, Cyrus planned a machine entirely different. He built it without his father's knowing it, and tried it out one fall. It was not entirely a success, but he made some changes and tried it out again. Finally, in 1831, he had made his first successful reaper.

He wasn't entirely satisfied, however, and he kept on making improvements until, in 1834, he had a machine good enough to patent. He secured a patent in Washington, and then tried to sell some of the reapers for thirty dollars apiece. No one would buy. He advertised in one of the local papers, and gave a demonstration on one of the farms near by; but people were not accustomed to seeing machines on a farm, and no one thought he could run a reaper if he did buy it.

In 1839 he invited a number of the farmers to see the reaper work. It cut two acres in an hour. That was really wonderful in those days, but still no one would buy.

The next year, however, a man at Egypt, Virginia, decided to invest thirty dollars in the reaper. He took it home and cut his grain with entire satisfaction. Naturally he praised it and told Cyrus what a good machine it was.

Cyrus told other farmers what this man had said, and finally, the next year, persuaded seven farmers to buy reapers. He had raised the price, too, to one hundred dollars. By working hard he sold twenty-nine machines in 1843, and fifty the next year. He used all kinds of legitimate means of making sales. When he found a man who really needed a reaper, he stayed with him until he purchased one.

Later he got other patents for improvements he made, and then he moved to Chicago to build a large factory in which he might make more reapers in one year than some folks had thought could possibly be used in ten. He didn't have enough money to build a factory when he went to Chicago, but he went to the mayor and told him about

Down in the wheat field.

the reaper. The mayor had some money to invest, and he thought this would be a good way to make more with it; so he gave Mr. McCormick twenty-five thousand dollars to build a factory, and reapers were made pretty fast from that time on. Mr. McCormick devoted much of his time to planning ways of selling the machines, and was very successful.

Finally the mayor and McCormick decided to dissolve their partnership, and Mr. McCormick gave him fifty thousand dollars for his share. After that the factory was run by McCormick and his two brothers.

The old reaper was not as good as it might be, however. The improvement Mr. McCormick wanted to make was an attachment that would bind the grain into bundles. It had been necessary for men to do that by hand, and it was tiresome and expensive work. But it was difficult to make a machine that would tie knots as a man could, and McCormick was not able to develop the attachment he wanted. Finally a man by the name of Appleby made a machine that bound the grain into bundles and tied them. Wire was used at first, but later a binding twine, very similar to the twine we use to-day, was made and proved more successful than the wire. That attachment is still used on the grain-binders of to-day. Very little change has been made in it. It made a big difference in the use of the machines, however, for every one who saw or heard of the work it did wanted one.

McCormick was not satisfied to sell his machines in America alone; so he took some of them to England to the first great World's Fair, which was held in London. Every one there was interested in it, and he was able to

establish several branch houses in Europe where the machines could be sold.

In all the years that McCormick was making so much money he never ceased to work hard. He was busy all the time, always working out some methods to make the machines better or to sell more. And when he died the last thing he said was: "Work, work!"

JOHN Y. BEATY.

THE FARMER'S CREED

I believe in a permanent agriculture, a soil that shall grow richer rather than poorer from year to year.

I believe in hundred-bushel corn and in fifty-bushel wheat, and I shall not be satisfied with anything less.

I believe that the only good weed is a dead weed, and that a clean farm is as important as a clean conscience.

I believe in the farm boy and in the farm girl, the farmer's best crops and the future's best hope.

I believe in the farm woman, and will do all in my power to make her life easier and happier.

I believe in a country school that prepares for country life, and a country church that teaches its people to love deeply and live honorably.

I believe in community spirit, a pride in home and neighbors, and I will do my part to make my own community the best in the State.

I believe in the farmer, I believe in farm life, I believe in the inspiration of the open country.

I am proud to be a farmer, and I will try earnestly to be worthy of the name.

FRANK I. MANN

THE CORN SONG

Heap high the farmer's wintry hoard!
  Heap high the golden corn!
No richer gift has Autumn poured
  From out her lavish horn!

Through vales of grass and meads of flowers.
  Our ploughs their furrows made,
While on the hills the sun and showers
  Of changeful April played.

We dropped the seed o'er hill and plain,
  Beneath the sun of May,
And frightened from our sprouting grain
  The robber crows away.

All through the long, bright days of June
  Its leaves grew green and fair,
And waved in hot midsummer's noon
  Its soft and yellow hair.

And now, with autumn's moonlit eves,
  Its harvest-time has come,
We pluck away the frosted leaves,
  And bear the treasure home.

There, when the snows about us drift,
  And winter winds are cold,
Fair hands the broken grain shall sift,
  And knead its meal of gold.

JOHN GREENLEAF WHITTIER.

AN ACRE OF WHEAT

I think all the farmers in the township knew of the competition between Hill and me concerning that model field of wheat. At least every farmer that passed, slowed down to a walk, or even stopped altogether, so that the driver might look over the fence and "see how the wheat was doing"; and if either Hill or I went to the post-office of an evening we were targets for serious questions as well as for good-natured jesting as to the results of our experiments in growing wheat.

It came about in this way: Hill is a farmer of the good, old-fashioned kind who has never made a study of farming as a science, and who has always been ready to poke fun at what he calls our "new-fangled methods." Hill is my second cousin, and during the year that I lived on the farm next to him we argued a good deal about our different methods. But neither of us was convinced by the arguments of the other, and we agreed at last to settle the matter by experiment; or, to put it in other words, Hill laid a wager with me that he could grow a better acre of fall wheat than I. The conditions were that the two acres were to be side by side, just where our two farms adjoined, and that each of us was to have a free hand to do anything he pleased to increase the amount. The proceeds from the two acres were to go to the one securing the larger yield.

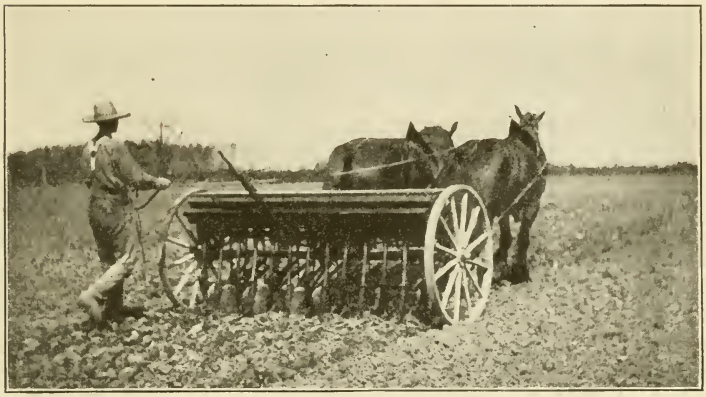
We had chosen this particular strip of ground chiefly because the soil there was a good clay loam, which is usually

found to be the best soil for growing wheat, but partly also because both fields were fresh, having been used that year for a crop of peas. As soon as the peas were gathered in, we measured off the two plots very carefully, and as all the other details had already been arranged we were at once off to a good start.

I knew that if I were to succeed against a "common-sense" farmer like Hill, it could only be by exercising greater care in preparing the ground and in choosing and sowing the seed. After our seed was once planted we could do practically nothing to make the yield any greater. The first question I had to decide was whether I should use any fertilizer. Hill manured his ground well, but instead of spreading the manure at once, he left it in piles, and as a result after a week of rain much of its strength had soaked into the ground under the piles. I had the advantage of using a "spreader" to lay it on evenly. But in addition to the manure, I provided commercial fertilizers in case the ground should be lacking in the potash, phosphoric acid, and nitrogen that are essential to the growth of the wheat plants.

Having provided fertilizers, I had next to decide when I should plough the ground. Hill was in no hurry, and left the ploughing till late; but I had been taught to plough early so as to give the furrow slice time to settle, and I began to prepare my ground in August, a full month before the time for sowing. It seemed to me that my ground was rather stiff and lumpy, and as an extra precaution I rolled it before harrowing. When I had finished harrowing I found that I had a good firm undersoil which would hold moisture, covered over by a layer

of fine loam two or three inches deep. During the next few weeks I harrowed my plot regularly once a week, partly to prevent any weeds from springing up and partly to expose the soil to the air and to keep the surface fresh and moist. Hill, in the meantime, had left his ploughing



I did my sowing with a drill.

till late, and as he did not roll his ground, or harrow it more than once, he was quite ready to laugh at me for my pains.

"When you have farmed as long as I have," he persisted, "you'll learn that there's such a thing as being over-particular and you'll find out that these new-fangled notions of yours don't pay."

When we laid our wager we agreed that we should both sow the same kind of wheat, so that neither of us might have any advantage in choosing any special variety, but I at least took pains to see that I had a good quality of seed, with kernels large and plump, and free from signs

of weeds. We had, of course, to use our own judgment as to how much seed we should sow. Every kernel of grain, as all farmers know, sends up first a single shoot; and then if the soil is favorable and if there is plenty of room, a number of other shoots will spring up from the same root, so that a single seed will give several heads of grain. When the stalks multiply in this way the grain is said to "stool" or "tiller." Hill, in my opinion, did not usually sow thickly enough, but depended upon the stooling of the wheat to give him a good crop. I had been taught to use plenty of seed and when the time came for sowing I used nearly two bushels of seed wheat, although Hill used little more than half that amount. Hill was inclined to laugh at me, too, because I did my sowing with a drill. The old-fashioned way, he boasted, was good enough for him; and so he scattered his grain broadcast and covered it with the harrow. But whatever else might happen, I was at least confident that my acre of wheat was more evenly sown and better covered than his could possibly be without the use of the drill.

I had finished my seeding both in my model plot and on the rest of my farm before the end of September, and as Hill did not plant till ten days later, my grain was the first to appear, and before the winter set in it had a good growth. But Hill's field looked well, too, even if it did seem slightly less strong than mine, and it was much too early yet to make predictions.

It was a good year for wheat, and as the time of harvest approached, both fields appeared to be in excellent condition. In order that the test might be absolutely fair, the owner of the farm across the road, who had taken a keen

interest in the wager from the very first, agreed to act as judge; and it was left to him to do the cutting, storing, and threshing of the grain. Of course the farmers in the neighborhood had taken sides and had discussed among themselves the methods we used, and compared them with their own. Indeed, most of them were almost as eager as either Hill or I to measure the results, and on the day appointed for threshing it seemed as if half the farmers in the township were present.

Hill's grain was threshed first and, to the surprise of every one, turned out a full 36 bushels. Would mine go more? It was an anxious half-hour, but as box after box was emptied, I crept slowly up—38, 39, 40, 41, 42, 43—and a half! Hill had thirty acres in wheat that year, and with the market at ninety cents a bushel, it was an easy matter for him to figure out his loss!

It was a good year for wheat.

The fruits of autumn.

THE SONG OF MILO, THE FARM-HAND

O Demeter, abounding in fruit and ears of the harvest,
Well may this field be worked and yield a crop beyond measure!
Hard, bind hard, ye binders, the sheaves, lest ever a passer
Say, "These men are poor sticks, and their pay is cash out of pocket."
Toward the north wind let your swath of grain in the cutting
Look, or else to the west, for thus the ear will grow fuller.
Threshers, threshing the corn, should shun the slumbers of noonday;
That is the very hour when the chaff flies off from the wheat stalk.
Reapers, begin your toil when the tuft lark soars from the meadow:
Cease when he sleeps: besides, in the heat of the day take your leisure.

E. C. Stedman.

THE APPLE HARVEST

You see each day through September that the apples are getting larger and redder or more golden. Nature never forgets the beautiful in preparing the useful; and so beautiful is the orchard hanging full of apples that it seems almost a sacrilege to pluck them. But the old man who has seen this ripening sixty times retold, says: "Yes, we must be ready; it will not do to have other work in the way; the ladders and the barrels must be looked after, and the cellar must be prepared for storing the apples."

The modern apple tree seldom grows over twenty-five feet high, and can be fully picked with a twenty-foot ladder. My orders are: "Lay every apple into the basket; do not toss or drop it one inch. When the basket is level full, without heaping, come down, and lay the apples one by one into the wagon on a blanket or some soft hay. Never pour the fruit and never put in an apple that has fallen, no matter how sound it looks."

The picker will protest: "What! not pour smoothly over my hands?"

"No, sir, not even with delicacy. I will furnish the time—only do you never pour or drop my apples."

The ordinary man is quite unprepared for this sort of care, but it is your only way of getting a profitable crop out of your orchard. Handle apples like eggs and there is money in the orchard every time; but break one cell in an apple and you have started decay. It may not show for some weeks, but that apple will not keep all winter—

not even if it be a Baldwin. When the basket is emptied into the bin from the wagon there should be the same judgment and care. As you lift the apples from the wagon, sort them into three grades: No. 3 for cider; No. 2 for

Down in the orchard.

early sale; No. 1 as absolutely perfect apples for storage or barrelling. It is a beautiful piece of work from first to last, but it permits no rudeness at any stage.

Before the apples are stored, the cellar must be thoroughly scoured and ventilated. So we wash the bins with soap

and spray them with formalin, and we do not leave a smell of must or mould anywhere, for an apple hates rank odors and it soon loses its own distinctive flavor in their presence.

An apple cellar is a delightsome place, or it ought to be. In it there is no storage of vegetables or of kitchen affairs. The ideal cellar should have a brook running through it if that were possible, for it is not the dry cellar that best keeps the fruit. It should not be mouldy, but it should not be dry. It should have plenty of windows; but these are for summer use, and in winter should never be opened. When the fruit is once in storage, the windows should be both closed and darkened, and should remain so till the last apples are disposed of in May or June. The walls of this cellar should be unusually thick, and it should be entirely separate from the house; for the temperature must be kept very near, or just above, freezing. It is possible for a farmer to have a cellar of this sort under his carriage-house or some part of his barns; but it should not be placed anywhere where the odors of the stable can reach the fruit. Burying apples in dug-outs is satisfactory, where there is no better provision for them, but they will quickly gather an earthy flavor.

E. P. Powell.

Sweetest memories of life cluster about the apple orchards. It [the apple tree] is a wonderful tree standing alone on a hillside, haunted by boys, and a favorite place for robins' nests. But an orchard of apple trees, standing in long, long rows all over the slope that looks down into a valley full of homes, is a gift surpassing all others for human ownership.

APPLE TIME

Now is the season when red apples gleam
  Amid the bronze, still leaves, or one by one,
When the wind stirs, fall to the orchard grass,
  There to be mellowed in the drowsy sun.

And one will gather them to cellar bins,
  The deep, dim, apple-odored cellar bins,
Where they may lie to wait those happy tides
  When festal fun and winter cheer begins.

And one will make the happy juices run,
  Golden and shining from the presses' lips,
While school-boys in the early frosty morn
  Stand by, to taste from eager finger-tips.

Now is the season of the apple's wealth;
  Then, friend, let this be your devout desire:
To walk the sunny hills by day, at night
  To sit with apples by your open fire.

ARTHUR L. PHELPS.

Noisily down the lane comes the traction-engine.

THRESHING

Noisily down the lane comes the traction-engine hauling the huge grain separator to the barn-yard. All is in readiness and soon is heard the cheerful "chug-chug" of the machines at work. The whirring wheels and rapidly revolving cylinders fascinate the boy. He watches every movement and asks eager questions of the men. Willingly he helps to store away the grain pouring so swiftly from the machine; and when the threshing is all over and the last shrill whistle of the engine is heard far down the road, he sighs with regret that one of the most interesting and exciting events of the year is over.

But threshing was not always done in such a speedy and interesting way. Hundreds and hundreds of years ago, when warlike Celtic tribes burned their grain stalks and then gathered up the parched grain from among the

ashes, perhaps the little Celtic lads watched the process with wide open eyes; but you would consider that a tame sort of threshing! Yet it was threshing; for the separation of grain from its straw, by any means whatever, is threshing.

This simple method of threshing by burning the straw was used when the quantity of grain was great enough to permit; but where only a small quantity of grain was grown, it was rubbed out by hand. A little later, men began to form the stalks into bundles, and then they separated the grain from the straw by beating these bundles against the hard earth.

But the Egyptians and the Israelites found a better way. They used to choose a hard piece of ground that was on a higher level than its surroundings, and around it they built a circular wall to form an inclosure. The grain stalks were spread on this "floor," which was from fifty to one hundred feet in diameter, and oxen were driven round and round to tread out the grain. You will see the reason why a high piece of ground was chosen. It was because they wanted to make use of the winds to blow away the chaff. But while this method of threshing was a great improvement over the earlier ways, it was very wasteful, for a considerable amount of grain was trodden into the ground by the hoofs of the oxen. Yet threshing is done in this way still in Persia, in India, and in some parts of southern Europe.

Other races used a threshing sledge. This was in some cases an ordinary sledge with a ridged bottom, and it was drawn over the grain by oxen. The better sledges had heavy frames, on which were mounted three or more

spiked rollers, which revolved as the sled was drawn along. This kind of threshing may still be seen in some parts of the Orient, although it, too, is a wasteful operation.

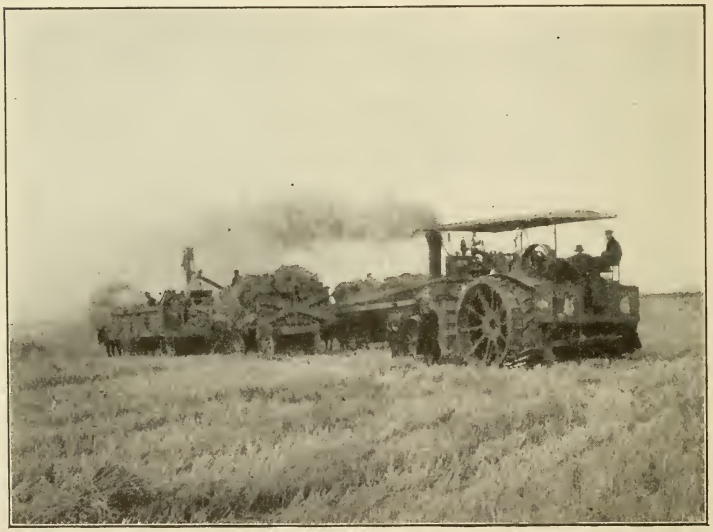
At length some one thought of a new plan, and began to use a special sort of stick with which to beat out the grain. Little by little these sticks were improved, until at last it became quite the common thing to use a staff (about five feet long), to which was attached by a flexible thong, a piece of heavier, thicker wood (about thirty inches long), known as the *swingle*, or beater. This threshing instrument was called a *flail;* and it has been in use up to the days of our grandfathers. When the flail was used, the straw was raked away; and the wheat was cleaned of chaff by tossing the mixture in the air, so as to allow the grain to fall to the earth and the chaff to blow away. In this way a man might, on an average, thresh and clean twelve or fifteen bushels of grain in a day.

But this slow process has given way to one by which nearly a hundred times that amount may be threshed in the same length of time. About the beginning of the eighteenth century, machines began to take the place of hand labor in many kinds of work. The first machines that were invented for threshing grain were operated by water-power, but all were failures. At last, however, in 1786, a Scotchman named Andrew Meikle succeeded in making a machine that did the work effectively by means of horse-power.

Since then the threshing-machine has been continually improved. With the introduction of the steam-engine, during the past century, came the invention of the steam-

thresher and the traction-engine; and now we have complicated threshers with band-cutters, feeders, stackers, grain-measurers, loaders, straw-burners, and many other devices for overcoming the hard labor and discomfort of threshing. Andrew Meikle's first machine would appear very crude and clumsy compared with those now in use; and how the Persian or the Hindoo, still accustomed to the old, slow, tedious, wasteful methods, would stare, if he were to walk into one of our Western farmyards on threshing day!

M. B. Stevenson.



The steam-thresher.

Ploughing—the old way.

THE PLOUGH

From Egypt behind my oxen
With their stately step and slow,
Northward and east and west I went,
To the desert and the snow;
Down through the centuries one by one
Turning the clod to the shower,
Till there's never a land beneath the sun
But has blossomed behind my power.

I slid through the sodden rice-fields
With my grunting humpbacked steers;
I turned the turf of the Tiber plain
In Rome's imperial years.
I was left in the half-drawn furrow
When Coriolanus came,
Leaving the farm for the Forum's stir
To save a nation's name.

Over the sea to the north I went,
  White cliffs and a sea-board blue,
And my path was glad in the English grass
  As my stout red Devons drew.
My path was glad in the English grass,
  For behind me rippled and curled
The corn that was life to the sailor-men
  That sailed the ships of the world.

And later I went to the north again,
  And day by day drew down
A little more of the purple hills
  To join my kingdom brown.
And the whaups wheeled out to the moorlands,
  But the gray gulls stayed with me,
Where my Clydesdales drummed a marching song
  With their feathered feet on the lea.

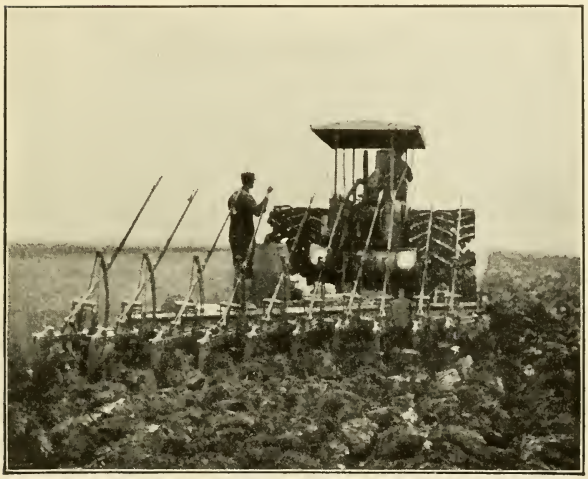
Then the new lands called me westward;
  I found in the prairies wide,
A toil to my stoutest daring,
  And a foe to test my pride.
But I stooped my strength to the stiff black loam,
  And I found my labor sweet;
And I loosened the soil that was trampled firm
  By a million buffaloes' feet.

. . . . . .

From Egypt behind my oxen,
  With stately step and slow,

I have carried your weightiest burden,
Ye toilers that reap and sow!
I am the Ruler, the King,
And I hold the world in fee,
Sword upon sword may ring,
But the triumph shall rest with me!

WILL OGILVIE.



Ploughing—the new way.

THE GRAIN ROBBERS

Did you ever hear of a wheat-field full of robbers, each choking as well as robbing its victim? Every year millions of dollars are lost in grain-fields by robbers of this sort, and yet you may pass, again and again, a field in which they are at work, without seeing one of them or hearing a sound! For these thieves are so tiny and carry on their plundering so quietly as to attract little attention. When the farmer sees reddish or black spots breaking through the straw of his grain, he knows the robbers are at work; and he may shake his head sadly, and perhaps say to his neighbor, "I see signs of rust on my crops"—for "rust" is the name by which these marauders are known.

Let us follow one of these stealthy robbers on its destroying way. If you were to examine, in spring, some of the previous year's wheat straw which had been affected by rust, you might see certain peculiar black streaks. Look at these through a microscope and you will see that the streaks are made up of a mass of tiny bodies. These are called *spores*. They have thick coats, which enable them to live through the winter. In spring they begin to sprout and produce other little spores, which are called *sporids*.

Along comes the wind, which carries off these little sporids and lodges them on the leaves of plants. Some of them fall upon the leaves of the barberry-bush, which is especially suited to their growth; and here the sporids push out small tubes into the tissues of the leaves, and

branch out in a sort of net-work. Soon a bright yellow spot shows on the under-sides of the leaves and the microscope shows this spot to be made up of little cups, in clusters; and in each little cup are small *yellow* spores. This is the first stage in the growth of rust.

These yellow summer spores are, in their turn, started off on their travels by the wind; and if they settle on growing wheat, oats, or other grain, they at once begin to find their way into the plant through the breathing-pores. They greedily take for themselves the sap which ought to go to nourish the grain. The roots of the grain plant go on faithfully taking in the raw materials from the soil, to be made over into plant tissue; yet the plant starves, because the food is stolen by these hungry spores.

Now, indeed, follows a struggle! For, even though handicapped by these robbers, the wheat may grow. If the weather is clear and bright, it may ripen without showing any sign of its struggle. But if the weather is damp and sultry, the robber-rust gains the victory, and cuts off the victim's supply of air by filling the breathing-pores with an immense number of rough *red* spores. It is these spores that the farmer dreads to see—for the summer wind may scatter them far and wide to continue their deadly work in every field they reach. This is the second stage in the growth of rust.

The growth of the successful summer spore continues until late in summer. Then the *black* streaks are produced by the formation of the winter spores which are to preserve the life of the parasite robber through the cold of winter.

Is the farmer helpless before this robber-rust? Has

he no way of protecting his grain? Nothing can be done after the rust has established itself in the growing crops; but, just as we protect our homes from robbery by making it difficult for robbers to get at our belongings, so the farmer may do something to discourage this troublesome rust. If the straw of rusty grain is completely rotted, the winter spores will not be so likely to sprout in the spring. And if the soil is well-drained, and attention given to all the conditions which tend to produce healthy plants, the grain will have a better chance of winning in the struggle with its enemy.

M. B. Stevenson.

AUTUMN

Then came the Autumn all in yellow clad,
As though he joyed in his plenteous store,
Laden with fruits that made him laugh, full glad,
That he had banished hunger, which tofore
Had by the body oft him pinched sore:
Upon his head a wreath, that was enrolled
With ears of corn of every sort, he bore:
And in his hand a sickle he did hold,
To reap the ripened fruits the which the earth had yold.

Edmund Spenser.

THE WANDERERS

If you were to ask which is the most interesting domestic animal on the farm, I should, I think, name the turkey. There is at least one time in the year when it is, you will admit, very interesting—when it appears on the table, at a Thanksgiving or a Christmas dinner, brown and tender, with savory dressing and cranberry sauce. And then you begin to wonder whatever a Christmas dinner could have been like before Columbus discovered America in 1492, when there was no turkey and no potato to go with it.

Yes, turkeys had their first home in America, and not in Turkey in Europe or Turkey in Asia, as I used to imagine when I was a boy at school. It seems to me I should like to have gone hunting in those days, in one of the Mexican jungles, with the chance of coming on a covey of wild turkeys as a part of the day's game. And if I had managed to bring down *one* of them—a big, sixteen-pound bronze fellow—I should have been satisfied with my bag for the day. What a stir a flock of wild turkeys must have made when suddenly startled from their feeding-ground in the underbrush or from their perches in the lowest branches of the trees in the jungle!

When he was a wild, jungle bird, the turkey, of course, got his food for himself, and wandered sometimes a long distance in search of it. Even yet, on the farm, one of the first rules for bringing up a brood of turkeys is, "Give them range," for they still like to follow so far as they can

their old wild way of living; and a flock of turkeys will take the run of the farm and the woods, and sometimes of the whole neighborhood. But there is one good thing about these wanderings—the flock of turkeys seldom need to be fed at home; and since they live chiefly on bugs and grasshoppers, they do a good deal toward keeping the farm clear of insects of this kind.

But though they are generally able to look out for themselves in getting a supply of food, a brood of turkeys are difficult to bring up. To begin with, the mother bird is likely to "hide away" her nest in some out-of-the-way corner of the farm, and when the young are hatched out, especially if the weather is cold or wet, many of them are lost before the new brood is discovered. If there is one thing above another that young turkeys cannot stand, it is getting wet, and if they are allowed to drag through the wet grass, it is almost certain to be fatal. Then, too, as soon as they are hatched, the young turkeys are likely to be attacked by lice and to die as a result. If they escape these two evils, there is always the danger of hawks and owls, or skunks, and even rats. And then there are the usual turkey diseases, such as pip and gapes and blackhead, which account for a large number of others.

If the turkeys are left to shift for themselves, they are almost sure to suffer; but if it is possible to give them a little extra care, many of the new brood can be saved. In the first place, the old turkeys should be watched so that their nesting-places may be discovered, and if barrels or boxes containing dry hay or straw are left in likely nesting-places, there is a good chance that the turkeys will make use of them. In order to keep down the lice, the ground

beneath the nest should be sprinkled with slaked lime, and at least twice a week during the brooding period the old turkey should be well dusted with insect powder. And after hatching, the young turkeys should be examined from time to time to see if they are free from lice. When insect powder is used, it must be put on so that it will reach the skin, and care must be taken to keep it out of the eyes.

After the young are hatched, both the mother and young should be placed in a light, airy coop—one which is sufficiently roomy for the old bird to move about in. The young birds must be shut in at nights and in damp weather; but on warm sunny days, when the grass is dry, they may be permitted to run in an inclosed yard. But it should be remembered that extremes of heat and cold are to be avoided. At other times, while the young are shut in, the mother bird should be allowed out for food and exercise. The use of the coop should be continued until the young birds are old enough to wander with the mother or to roost out at night. For the sake of cleanliness the position of the coop should be changed every few days.

The food of turkeys, both young and old, is just as important as their shelter. Information regarding the feeding of turkeys is given in the bulletins and poultry books; but there are one or two general rules regarding food that should always be remembered. In the first place, the young turkeys should not be allowed to gorge themselves with food; and when grain is thrown out to them, it should be scattered so that the turkeys may pick it up a grain at a time. Above all things, they must be given no sour or fermented food. Sour food for turkeys means certain death. When the flock of turkeys are on their wanderings about

The food of turkeys is as important as their shelter.

the farm during wet weather, their usual insect food is generally scarce, and to prevent the young turkeys from continued wandering through the wet grass, the flock should be hunted out and fed.

Since turkeys are given to wandering, there is always danger that they may stray too far away or join themselves to a neighbor's flock. When all the turkeys in the neighborhood are of the same breed, it is often difficult to tell them apart; and for this reason some farmers prefer to keep different breeds from those of their neighbors. The bronze turkey is probably the most common breed; but other well-known varieties are the buff, the slate, the white, and the black, each of which has its own special advantages. But whatever breed is chosen there are certain well-known marks of a good turkey to look for in making the choice—a red head, a bright eye, and a disposition that is not too wild.

A THANKSGIVING

Lord, Thou hast given me a cell,
Wherein to dwell;
A little house, whose humble roof
Is weather-proof;
Under the spars of which I lie
Both soft and dry;
Where Thou, my chamber for to ward,
Hast set a guard
Of harmless thoughts, to watch and keep
Me while I sleep.
Low is my porch, as is my fate;
Both void of state;
And yet the threshold of my door
Is worn by the poor,
Who thither come, and freely get
Good words, or meat.
Like as my parlor, so my hall
And kitchen's small;
A little buttery, and therein
A bittle bin,
Which keeps my little loaf of bread
Unchipt, *unflead;
Some brittle sticks of thorn or briar
Make me a fire,
Close by whose living coal I sit,
And glow like it.
Lord, 'tis Thy plenty-dropping hand
That soils my land,
And gives me, for my bushel sown,
Twice ten for one.

ROBERT HERRICK.

* *Unflead*—uncracked.

Cotton squares that have been injured by boll-weevil.

MAKING OVER THE COTTON FARM

For the last three or four years Farmer Francis had not made a success of his cotton crop. The plants had not produced well, the crop was late, the weevils had destroyed most of it, and what Francis did manage to save was of poor quality. He was discouraged—for what had happened for several years might easily happen again, and, as far as he could see, there was no help for it. If the boll-weevil was going to eat up his cotton crop, who could prevent it? And, do his best, his farm never would produce good cotton anyway!

But just when things appeared to be at their worst, something happened which gave Farmer Francis a good deal of encouragement and set him once more upon a

fair way to prosperity. A young man who had been sent out by the government to study crop conditions in the South, came into the neighborhood, and, partly by chance, partly out of curiosity, Francis went to hear him speak at a meeting in the neighboring town. To his surprise, the young man began by describing a cotton farm so like his own that Francis might have imagined that the description was meant just for him alone. An unproductive farm, the boll-weevil, poor cotton, and low prices—these were the conditions for which he proposed to find a cure. And what was the cure? Francis listened eagerly while the young man talked of remedies for worn-out soil and explained the value of rotation of crops and of proper fertilizers for the soil. Then came the question of improving the crop by choosing good seed. It had never occurred to Francis that the kind of seed made any serious difference in the crop; and, as for rotation, he could not recall a time when cotton had not been grown on most of the fields in his farm.

But the most interesting part of the evening's talk was the advice which the lecturer gave as to the best method of fighting the boll-weevil.

"The weevils that are going to attack your cotton next spring," the lecturer explained, "must live through the winter. Down in your fields the old weevils are getting ready for the cold weather, feeding fat on the squares and small bolls and leaves that are left on the old plants; and new broods of young weevils are coming out. Every weevil that begins work in the spring means millions more before the season is over. Why not begin the fight now and try to starve them out before winter comes on?

Destroy the old plants with their squares and small bolls, and you will have fewer weevils to begin with in the spring."

Different ways of destroying the old plants, by burning, ploughing under, and pasturing, were suggested; and besides attempting to starve the weevil out in the fall, the farmers were advised to clean up their farms so as to destroy the corn-stalks, weeds, and rubbish in the neighborhood of the cotton-fields, in which the weevils were likely to pass the winter.

"And," added the lecturer, "if you will set the children to pick off the old weevils as soon as they appear on the plants in spring, and gather and destroy all the squares which are punctured by the weevil, you may account for thousands of weevils which, if left alone, will play havoc with your cotton."

As Francis listened to the lecture and thought about his own careless methods of farming, he could not help wondering that he had managed to save any of his cotton at all; and in the intervals of the discussion he mapped out for himself a plan of campaign by which his farm might be cleaned up and his cotton crops might be improved.

"But in order that your cotton may have a fighting chance against the weevil," continued the lecturer, "it must be brought to maturity as early as possible. If your crop is early, there is a chance that your cotton-plants may be able to set squares faster than the weevils can multiply. The later the crop, the greater the number of weevils to destroy it."

Then came the discussion of the different means for securing an early crop. Quick-growing land, proper fer-

tilizers, the choice of early varieties, thorough cultivation of the soil—these and other agencies for bringing the crop to early maturity were one by one considered and discussed.

The lecture contained so many good points that Francis found it impossible to remember all the suggestions that were made; but it had at least one good result—it made Francis discontented with his own methods and encouraged him to think that he might yet be able to do something with his own run-down farm. One of the first things that he did on his return home was to send for bulletins and begin to read for himself. It was no small task, you may be sure, to make over his farm; but there was pleasure in the cleaning up and in planning for a rotation of crops and for the improvement of the soil itself. In order to carry out a rotation, he planted a smaller part of his farm in cotton than heretofore, and because there was less of it, he was able to cultivate his crop more thoroughly and give more attention to his fight against the weevils than he had ever done before. The neighbors were a little inclined to smile at the enthusiasm with which Francis undertook to carry out his new methods of farming; but he could well afford to let them smile, for at the end of the first season he found that his crop of cotton was more than double what it had ever been in any single previous year. "Patience and perseverance," he was often heard to say, "together with a clean farm, good fertilizers, and an early crop, are the best backers you can have in the fight against poverty and the boll-weevil."

Your farmhouse should be a part of the landscape.

A BETTER HOUSE

If you had your choice as to the kind of house you might live in, what would you choose? Remember, you are to live in the country, and the kind of house you might build in the country would likely be very different from what you would build in the city. If you could transplant some of the city houses to the country, they would, in most cases, look very much out of place, because they are not suited to the surroundings of the country. In building your farmhouse you must bear in mind that it is to be part of the landscape—a picture set into a framework of fields and trees.

It does not matter much what material your farm-

house is made of, so long as it suits its surroundings and is convenient and comfortable, and so long as it can easily be kept in repair. Frame houses are very common in the country; but, in order to look well, a frame house must be frequently painted, and this costs a good deal both in time and money. This is one reason why houses of brick or stone are becoming more common in the country.

In planning a house, you must, of course, first decide upon the size and shape; and perhaps you should be warned against building too large a house. Remember that a large house is not usually so cheerful or comfortable as a smaller one, and it is certainly harder to keep clean. When the boys and girls grow up, the family soon becomes scattered, and father and mother are likely to find that the large, empty house is lonely and cheerless. In deciding upon the shape of the house, the important thing is to make it simple and convenient. It is more important that your house should be comfortable and easy to work in than that it should have a fine appearance.

When you begin to build, the first part of the house to be provided for is the cellar. A farmhouse should have a cellar under the whole house, not only because it makes the house warmer, but because it can be put to so many uses. The cellar should be well lighted; and if it is light and dry, a room can be set apart for a work-bench and tools. There should always be a room in which the boys can work, if they wish, on winter evenings. The cellar walls are usually made of either stone or concrete; but since concrete is not always water-tight, it is best, unless the ground is very dry, to lay a tile drain around the

outside and to put a thick layer of gravel against the concrete walls.

Besides having a good cellar, the house must have a good roof; for the roof, more than anything else, gives character to the house. A roof that slopes too sharply does not look well; and it should not be cut up into fancy gables or bordered with an ornamental "fringe" of any kind. The roof should be plain and broad and should reach out well over the walls. Some people like the red roof for a farmhouse, and there are many who prefer tile or shingle roofs to metal, because they feel that metal has a harsh appearance and does not harmonize with the landscape.

The best rooms in the house should be the living-room and the kitchen, for these are the rooms in which the family spend most of the time. If a separate dining-room can be provided, in which the table can remain "set," it will save mother a great deal of labor. In the down-stairs rooms, plenty of pantry and cupboard space should be provided; and above all things the kitchen should be carefully planned with a view to the saving of needless steps.

Can you afford a fireplace in the living-room, and perhaps in the guest-chamber—the "spare" room upstairs, also? It will give warmth and cheerfulness on cold evenings and will, besides, help to ventilate your room. If you have a fireplace it is best to make it large. Let the chimney come through the roof, generous, big, suggesting warmth within, suggesting all manner of fine blazes upon a glowing hearth. Nothing more adorns a country house than a generous chimney.

Now let us go upstairs; and in going up, we must not forget the stairs themselves. The stairs of a farmhouse should be made of hardwood, with steps that are both

The stairs should be made of hardwood with steps low and broad.

low and broad, so that they may be easy to climb. The upstairs should have a good, well-lighted hallway, and the rooms should not be too large. Many of the best farmhouses nowadays have "sleeping porches," so that bedrooms are used only for dressing. The clothes-closets,

however, should be roomy; and if there is space for a small window in the clothes-closet, it will be all the better.

It would take too long to describe all the special conveniences which a modern farmhouse may have. Many homes in the country are provided with steam-heating, bathroom, hot and cold water, and electric light; and now that the farmer is able to get a better education and to make the farm pay better, there is no reason why he should not live in "a better house."

(*To be continued.*)

I would have our ordinary dwelling-houses built to last, and built to be lovely; as rich and full of pleasantness as may be, within and without . . . with such differences as might suit and express each man's character and occupation, and partly his history. . . . When we build let us think that we build for ever. Let it not be for present delight, nor for the present use alone; let it be such work as our descendants will thank us for, and let us think, as we lay stone on stone, that a time is to come when these stones will be held sacred because our hands have touched them, and that men will say as they look upon the labor and wrought substance of them: "See! this our fathers did for us."

RUSKIN.

WINTER

THE FARM CREED

We believe that soil likes to eat, as well as its owner, and ought, therefore, to be liberally fed.

We believe in large crops which leave the land better than they found it—making the farmer and the farm both glad at once.

We believe in going to the bottom of things and, therefore, in deep ploughing and enough of it. All the better with a subsoil plough.

We believe that every farm should own a good farmer.

We believe that the best fertilizer for any soil is a spirit of industry, enterprise, and intelligence. Without this, lime and gypsum, bones and green manure, marl and guano will be of little use.

We believe in good fences, good barns, good farm-houses, good stock, good orchards, and children enough to gather the fruit.

We believe in a clean kitchen, a neat wife in it, a spinning-wheel, a clean cupboard, a clean dairy, and a clean conscience.

We firmly disbelieve in farmers that will not improve, in farms that grow poorer every year, in starving cattle, in farmers' boys turning into clerks and merchants, in farmers' daughters unwilling to work, and in all farmers ashamed of their vocations or who drink whiskey until honest people are ashamed of them.

HENRY WARD BEECHER.

THE FARMER AND THE MILLIONAIRE

(David Grayson is busy at work on his farm, when he is visited by John Starkweather, a millionaire who lives in the neighborhood. He gets John Starkweather to help him with his work, and when they have finished, the following conversation takes place.)

We both washed our hands, talking with great good humor. When we had finished, I said:

"Sit down, friend, if you've time, and let's talk."

So he sat down on one of the logs of my wood-pile: a solid sort of man, rather warm after his recent activities. He looked me over with some interest and, I thought, friendliness.

"Why does a man like you," he asked finally, "waste himself on a little farm back here in the country?"

For a single instant I came nearer to being angry than I have been for a long time. *Waste* myself! "Oh well," I thought with vainglorious superiority, "he doesn't know." So I said:

"What would you have me be—a millionaire?"

He smiled, but with a sort of sincerity.

"You might be," he said. "Who can tell?"

I laughed outright. The humor of it struck me as delicious. Here I had been, ever since I had heard of John Starkweather, rather gloating over him as a poor, suffering millionaire (of course, millionaires *are* unhappy), and there he sat, ruddy of face and hearty of body, pitying *me* for a poor, unfortunate farmer back here in the country!

So I sat down beside Mr. Starkweather on the log and crossed my legs. I felt as though I had set foot in a new country.

"Would you really advise me," I asked, "to start in to be a millionaire?"

He chuckled.

"Well, that's one way of putting it. Hitch your wagon to a star, but begin by making a few dollars more a year than you spend. I know a man who began when he was about your age with total assets of ten dollars and a good digestion. He's now considered a fairly wealthy man; but, as I said, it's a penny business to start with. The point is, I like to see young men ambitious."

"Ambitious," I asked, "for what?"

"Why, to rise in the world, to get ahead."

"I know you'll pardon me," I said, "for appearing to cross-examine you, but I'm tremendously interested in these things. What do you mean by rising? And who am I to get ahead of?"

He looked at me in astonishment and with evident impatience at my stupidity.

"I am serious," I said. "I really want to make the best I can of my life. It's the only one I've got."

"See here," he said, "let us say you clear up five hundred a year from this farm——"

"You exaggerate," I interrupted.

"Do I?" he laughed. "That makes my case all the better. Now, isn't it possible to rise from that? Couldn't you make a thousand, or five thousand, or even fifty thousand a year?"

"I suppose I might," I said, "but do you think I'd be

any better off or happier with fifty thousand a year than I am now? You see, I like all these surroundings better than any other place I ever knew. That old green hill over there with the oak on it is an intimate friend of mine. I have a good corn-field in which every year I work miracles. I've a cow and a horse and a few pigs. I have a comfortable home. My appetite is perfect, and I have plenty of food to gratify it. I sleep every night like a boy, for I haven't a trouble in this world to disturb me. I enjoy the mornings here in the country; and the evenings are pleasant. Some of my neighbors have come to be my good friends. I like them, and I am pretty sure they like me. Inside the house there I have the best books ever written, and I have time in the evenings to read them—I mean *really* read them. Now, the question is, would I be any better off, or any happier, if I had fifty thousand a year?"

"You're making a strong case," laughed John Starkweather.

"Strong!" I said. "It is simply wonderful what a leverage upon society a few acres of land, a cow, a pig or two, and a span of horses give to a man. I'm ridiculously independent. I'd be the hardest sort of man to dislodge or crush. I tell you, my friend, a farmer is like an oak, his roots strike deep in the soil, he draws a sufficiency of food from the earth itself, he breathes the free air around him, his thirst is quenched by heaven itself—and there's no tax on sunshine."

David Grayson (adapted).

Down in the rice-field.

A FIELD OF RICE

If you could look into all the homes in the different countries of the world this morning, you would be surprised to find what a large number of boys and girls are having rice for breakfast; for, as you know, in eastern countries, such as Persia, India, China, and Japan, rice is the chief article of food.

In America, rice is grown chiefly in North and South Carolina, Louisiana, and Texas. A little over two hundred years ago (in 1694), a British ship from Madagascar to Liverpool was blown out of its course, and put in at Charleston. The captain gave Charles Landgrave

Smith a package of rough rice. This rice was used as seed, and from that time forward a large amount of rice was grown in the Carolinas. In the meantime the native French settlers in Louisiana and Texas were growing enough rice for their own use; but as they had to depend upon the natural rainfall for their crop it was sometimes a failure. Beginning about the year 1888, a great many settlers came into this part of the country. They also tried to grow rice, but since they could not regulate the supply of water their crop was always uncertain. At length, about 1895, an attempt was made to irrigate the land by artificial means. When water was required it was pumped from the rivers into canals, and in this way it was carried long distances, from higher to lower levels of the land; and when the farmers wished to make the fields dry, the water was shut off. Where it was difficult to obtain water from a river, wells were sunk, from which a sufficient supply was pumped. Both these methods of irrigation proved to be very successful, and, as a result, great tracts of land were opened up for rice-growing.

Rice, as you know, is a kind of grain, but it grows under different conditions from most other grains; for it requires a great deal of moisture and grows best on land that is under water for part of the year. But, of course, the ground should be as dry as possible when the ploughing is done and when the rice is harvested. The soil is prepared for rice in much the same way as for wheat or other grain. It is best to plough in the fall, so that the soil will be exposed to the air; and as the roots of the rice plant go down to a depth of twelve or fourteen inches it is necessary to plough deeply. Before the rice is planted the sur-

face of the soil should be finely pulverized. Then the rice is planted with a drill, in the same way as wheat.

After the rice comes up, it is usually necessary to go over it with a weeder to kill the weeds, and if the ground is very dry, the water should be turned on for a short time; but it should be drained off again at once.

From the time that the plants are about eight inches high until they are almost ready to harvest, they should grow in water, and the field should be covered with water from three to six inches in depth. In irrigated districts, the water is kept in circulation by having an inflow at the highest part of the field and an outflow at the lowest part. The water not only kills the weeds but makes the rice grow faster, and without water the grain would not head out properly.

Before harvest time the water is drawn off and the ground is left to dry out so that the harvesting-machines may be used. Rice is harvested in the same way as wheat—with self-binders—but as it is usually cut while the straw is still green, heavier machines are required. After it is cut, it is generally left standing in shocks for about three weeks to dry before threshing. When it is threshed, the outer husks are left on, and in this rough form it is known as "paddy." The rough rice is then put up in sacks and sent to the mill, where the husks are removed and the rice is polished in order to improve its appearance. The thin covering, or "cuticle," which is removed in the process of polishing, forms what is known as rice-polish bran. This bran is the part of the grain that contains most of the oil and protein, and it makes good feed for young farm stock.

Rice is not a difficult crop to grow, provided it is possible

to control the water-supply so that the farmer may be reasonably certain that his crop will not be a failure. Experience has shown that in order to make a success of the crop it is not a good thing to grow rice on the same soil year after year; and the most successful farmers in the rice district grow rice in rotation with other crops. On the whole, rice is a good-paying crop; but the farmer who wishes to make the most out of his soil must use modern methods of irrigating his fields and fertilizing his soil, and must take advantage of labor-saving machinery in preparing the ground and harvesting the crop.

OUT IN THE FIELDS

The little cares that fretted me,
I lost them yesterday,
Among the fields above the sea,
Among the winds at play,
Among the lowing of the herds,
The rustling of the trees,
Among the singing of the birds,
The humming of the bees.

The foolish fears of what may happen,
I cast them all away
Among the clover-scented grass,
Among the new-mown hay,
Among the husking of the corn,
Where drowsy poppies nod,
Where ill thoughts die and good are born,
Out in the fields with God.

TWO PICTURES

An old farmhouse with meadows wide
And sweet with clover on each side;
A bright-eyed boy, who looks from out
The door with woodbine wreathed about,
And wishes his one thought all day:
"Oh, if I could but fly away
From this dull spot, the world to see,
  How happy, happy, happy,
How happy I should be!"

Amid the city's constant din,
A man who round the world has been,
Who, 'mid the tumult and the throng,
Is thinking, thinking, all day long:
"Oh, could I only tread once more
The field path to the farmhouse door,
The old green meadow could I see,
  How happy, happy, happy,
How happy I should be!"

ANNIE DOUGLAS ROBINSON.

BUBO VIRGINIANUS

The Story of a Great Horned Owl

Bubo was hungry. The first snow had fallen the evening before, and the cottontails were afraid to venture out from their coverts. For them the snow was a great misfortune, for they could not make a movement over it without leaving their traces behind; and the white, glistening carpet was a fatal background against which their dark shadows appeared with every bound. So they wisely stayed within their ground burrows and brush piles, and Bubo went hungry.

He had taken up his position on the dead limb of a tall elm, whence he could see on all sides of him through the woods and away across through the little clearing by the river side. Twilight was deepening once more, and a little breeze was stirring through the few dead leaves that yet remained on the trees. But not a sound otherwise broke the stillness of the early night. Suddenly a faint rustling sounded from the underbrush across the clearing—sounded, and then ceased, and then sounded again. Now was the time for Bubo! "Ahaoo! Hooo! Hooo!" The big owl horn echoed through the woods, and the cottontail in the undergrowth, transfixed for the moment with terror, made one mad bound for safety. But the moment's delay was fatal; Bubo had dashed down upon his prey, stunned it with a fierce blow, and borne it aloft to the limb of the elm tree above.

Bubo was ravenous, and he soon made short work of the cottontail. Planting one cruel claw on its neck, he tore it to pieces with his strong beak and swallowed it in eager mouthfuls. And with a double tongue, a tip pointing downward to the throat as well, it was, after all, an easy matter to make the feast complete. Fur, skin, bones, flesh, and all—there was no division of good and bad and no rejection of clean or unclean. Bubo's appetite was not satisfied until he had devoured the last vestige of bones and blood.

He was quite satisfied now, and for the rest of the night he was able to enjoy to the full the sights and sounds of the November woods, stopping only in the course of a few hours to disgorge in one huge mouthful a ball of rabbit hair, the undigestible part of his evening meal.

The storm of the day before had passed away, and the moon stood clear and full over the valley to the east, tipping the frost-covered trees with misty whiteness and covering the floor of the great woods with an interlacing of black and white. Upon the top of the giant elm, close to the side of the jagged peak, sat Bubo.

"Ahooo! Ahooo! Hooo!" The echoes died away, and a moment later the call was answered in fainter horn-like notes across the valley, and then again in still fainter echoes, from the pine wood that bordered the low-lying sand dunes along the margin of the lake.

"Hoooo! Hooo! Hoo!" Like the hooting of a hoarse-voiced engine in the distance—a mournful, soul-stirring call, Bubo Virginianus; but it is Nature's voice withal, and it suits well with the harshness and bareness of the bleak November woods.

"Ahooo! Hooo! Hoo!" The cottontails are stirring now, but Bubo is satisfied. The start of terror passes unheeded, and the mad bound for safety awakens no response.

"Hoooo! Hooo! Hoo!" Till the moon goes down in the misty west, the drifting clouds overshadow the sky, and the whole wood is wrapped in thick darkness, in which tree and bush, beast and bird of prey alike, are swallowed up and lost!

The next night Bubo was absent from his accustomed place, and the deep owl horn from across the valley found no answering echo from the elm. On the other side of the great wood, down by the low-lying shore of the lake, the muskrats were building their winter mounds of weeds and grass in the shallow lagoons, and now with the approach of twilight their activity was redoubled. Up and down the dark shadows swam, plying in and out among the weeds and rushes, and around the very roots of the tree at the mouth of the creek, in which Bubo sat waiting and watching in the darkness. Bubo was not afraid of water. His thick coat of feathers protected him too well for that, but he knew better than to attack a muskrat in his native element. By and by, however, there is a rustle in the reeds close under the tree; a dark muzzle pushes itself up from the water and searches among the rushes along the shore. "Ahooo! Hooo! Hoo!" The hoarse owl horn mingled with the soughing of the water and sighing of the reeds, and then like a winged whirlwind the great, fierce shadow fell among the weeds.

And so throughout the late autumn and winter the feasting of Bubo continued. Sometimes, indeed, food

was scarce, but in general, when one source of supply was exhausted, another took its place. Now it was a flock of crows perched together in the dark midnight in the sheltering firs and spruces, or a bevy of innocent quail ranged in a picturesque circle in the dry leaves. Or, again, a belated black squirrel digging in the snow-drifts for a buried walnut in the mid-winter twilight. But the cottontail and the muskrats, after all, formed the staple of his fare.

Bubo's ear with its wonderful tall ear-tufts, or horns, was perhaps the greatest assistance in his hunting; but the eye was a mechanism in itself that was wonderfully adapted to his nocturnal owlish life. By day the pupil was only a small black spot in the centre of a great, yellow, glaring disk; but with the approach of darkness the yellow screen was drawn fully back, and the great staring black pupil remained with its retina set to catch every wandering glint of faintest light. In the daytime Bubo could see fairly well, but the light on bright days was too strong, and to guard against this he was provided with a movable film, or screen, under the eyelid, which he was able to let down over the eye at will.

In the short winter days he slept in a hole in the tree top, where he generally remained undisturbed. From his quiet retreat he could hear the puffing of the black squirrels in the big oak beyond, and the harsh croaking of the beautiful, red-bellied woodpecker as it flew from trunk to trunk. One afternoon a red squirrel and a red-headed woodpecker played an endless game of tag around and around the crotch of the tree below, and one dark and foggy morning a sleepless raccoon stuck his pointed muzzle

within the doorway, but withdrew it in precipitate haste. Bubo was left entirely alone, with only the dismal answering horn from the other woods to cheer his owlish soul in the gray dusk of the chill winter twilight.

Bubo's mate lived across the valley in the lake woods, and in the latter part of February the nesting operations commenced. In this particular season the big nest of a red-shouldered hawk, high up in a crooked elm, was chosen out and put into repair, and even before the stormy weather of March was over, three large gaping mouths in the nest demanded all the care and attention of Bubo and his mate.

Food was becoming scarce, but the wit of Bubo was equal to the emergency. He had discovered in the pine groves across the lake a large park which contained a fine supply of rare pheasants, and night after night he made fresh visits and helped himself liberally after his customary fashion.

This continued for about a week, when one dark midnight he discovered a tall pole directly above the pheasant pens—a splendid point of vantage from which he could see down into the pens and select his victims at ease. So down he sailed, noiselessly as ever, and lit upon the point. There was a sudden sharp click as the spring of a steel trap caught Bubo firmly by the claws. He strained every muscle and spread his huge wings in a vain effort to escape. It was of no avail. Then the instinct of the wild bird asserted itself, and he jerked savagely at the steel springs with his strong beak, but not a hair's breadth would they relax. All night long the struggle continued, but in vain, and the gray morning twilight found him captive still.

When the park ranger appeared in the morning, he at once lowered the pole. He wished to remove Bubo alive, so as to keep him prisoner for a while; but how to accomplish the task was a problem. Bubo had one foot still free, and the fierce beak and cruel claws were weapons to be avoided. He tried to approach from behind, but Bubo had the advantage there, for he was able to turn his head the full circle and could look directly over his back with as much ease as in facing to the front. Besides this, he kept his beak open and kept up a repeated hissing, which in itself was sufficient warning to the ranger to keep his distance and beware. A noose thrown over the body, however, soon secured the free foot and, watching his opportunity, the ranger seized the two wings and Bubo was helpless. And what splendid wings! A full five feet, as the ranger extended them, from tip to tip! What wonder if the wood-hare started in his form in the thicket, and the red weasel cowered low in his burrow at the sweep of their fatal shadow on the glistening white of the snow? Strong, soft, and beautiful, but rather to the wild creatures of the wood the noiseless ministers of death—swift, sudden, and unerring.

Before Bubo was freed from the trap, a small chain was fastened about his leg with a double knot, and this was attached to a staple in the side of a tree a few feet from the ground. The chain made all attempts to escape useless, but Bubo had another artifice which he made use of, an artifice which seemed a strange one, to say the least, in so seemingly fierce a bird—the common device of the weak in feigning death. When he found that all efforts to escape were in vain, his wings relaxed, he dropped

"Hoooo! Hooo! Hoo!"

head foremost to the ground and lay limp and apparently lifeless on the grass, from which condition he refused to be aroused until he was finally left to himself again.

During the day he remained undisturbed, except for a visit from a party of blue-jays. When they discovered him they came down in a company, and perched in a ring in the trees round about him, screeching and screaming their maledictions on his head. In the midst of this ring of enemies sat Bubo, staring, and blinking, and hissing, the horn-tufts bent down in token of vexation, and very wisely turning his head in all directions to guard against the expected persecution. But in the course of time, having vented their indignation on their enemy's head, they screamed hoarsely away and scattered once more to the distant quarters of the wood.

Twilight fell at last. A chickadee lisped a "dee, dee, dee" among the tree tops, and the evening melody of the wood-robin came up serenely from the budding elm woods in the valley. The hoarse croak of a bullfrog fell upon the gathering stillness of the night, and the tremulous quavering of the little screech-owl came thin and faint across the water from the distant wood.

Night had fallen, and with it Bubo's hour had come. He had not fingers to untie the knot and loosen the chain, but he had what served the purpose as well—a strong, fierce bill; and with it he pulled and shook and twisted the chain on his leg until, one by one, he had loosened the folds and shaken them free of his foot. The cord which was added, too, as an extra precaution, he cut with his sharp bill as with a knife, and a moment later was winging his way across the park lands, seizing a belated

squirrel in passing, in lieu of better and more satisfying fare.

Troubles never come singly. In Bubo's absence he was ousted from his customary daytime retreat by a wandering raccoon; and the following morning, for want of a better hiding-place, he took up his position for the day in the darkest crotch of a dense tree top near by, where he sat the day through, blinking and staring and dozing by turns.

It was there that I discovered him by accident late in the afternoon, in scanning the tree top for a black squirrel's hole; and as I watched him attentively through my field-glasses, it was not a difficult matter to discover the secret of his playing death the day before. So motionless was he, and so like the tree trunk itself, that I fancied him at first to be merely the bare and broken stub of a giant branch. The great feather-tufts above his ears stood up tall and stiff to catch the slightest wave of sound, and he sat so rigid and erect in the hollow crook in the limb that his enemies might well be deceived in taking him to be a part and parcel of the tree.

While I was lying watching, a crow flopped lazily across the valley, and, as fate would have it, alighted in this very elm. There was a moment of suspense, and then a loud, excited cawing. The secret of Bubo was discovered, but he never stirred so much as a feather.

Were there ever so many crows in a single wood? "Caw! C a w! Caaaw! Ha! Ha! Haw! Ha a a w! Owl! Owl! Owl! Here he is! Tear his eyes out! The villain! The thief! Haaaaw! The wretch! We'll have his life-blood! Revenge! Revenge! Oh, ha-a-a-a-a-w!"

There were a score of them at least, and if storming and scolding and threatening could have done the work, Bubo would have died the death a hundred times over. They knew the power of his fierce claws and bill from sad experience only too well, and were too wise and cunning to come within range. But they sat in a fierce ring around about him, above, below, and on every side. They circled round his head, hovered in the air above him, crept upon him from behind, crossed and recrossed in front of him, and flapped their wings jeeringly in his very eyes.

Then it was, if ever, that Bubo's strange power of turning his head the full circle stood him in lucky stead. On every side it seemed, wherever and whenever his persecutors looked, the big, glaring, yellow eyes and the hissing bill were upon them. How long the torment would have continued I do not know, had I not in my interest and curiosity inadvertently leaned out too far from my hiding-place. There was a loud caw of alarm and warning as I was discovered. The crows instantly scattered to the four corners of the wood; and Bubo spread out his great wings and noiselessly disappeared in the dense foliage of the tree tops beyond.

And so the round of life went on for Bubo, year in and year out. Summer wore into autumn once more, and the fallen leaves rustled again to the footfall of the rabbit or squirrel or to the stirring of the juncos in the underbrush. Winter came around once again with its paradise of white snow, its short days, and its long, lonely, dreary nights; and in spring the white-throats sang again in the budding thickets for one sweet day, as they passed on with the

great company of wanderers to their summer home in the distant north.

It was an early autumn evening, cold, rainy, and dreary. The wind had blown in fitful gusts all day, swaying the tree tops and scattering the falling leaves in every direction. Not a creature was stirring in the great woods, for wild creatures are too wise and too wary to risk their life on a stormy day, when the approach of an enemy cannot be readily heard. The great horn of Bubo sounded in vain above the rustling of the leaves and the creaking of the branches.

But, as the darkness deepened, a white object slowly emerged from a deep burrow under a rotten stump at the edge of the wood and finally disappeared among the clumps of withered goldenrod that covered the little clearing beyond. Bubo well knew what the white tail plume and the white fur meant. All the other wild creatures Nature had clothed with harmonizing colors, so that the grass, the leaves, the soil, the bark of the tree had, as it were, taken them under their protecting care. But to Mephitis Mephitica, the skunk, another weapon of defense had been given, and the conspicuous white of the back and tail was a danger signal, a warning to all other wild creatures to take heed, keep their distance, and beware.

But whatever the other animals might do, Bubo had no hesitation whatever in making the attack. The silence of his movements gave no warning of his approach, and he relied on the strength and swiftness of the fatal stroke to protect him against the customary danger. But for once, at least, on this autumn evening, fate was against him, and that "once" in a wild animal's life means in-

evitable death. Was it the whistle of the evening wind that gave the warning? Or was the evening twilight still bright enough to reveal the black falling thunderbolt to the victim's watchful eye? Bubo fell upon the whiteness in the weeds, but fell he knew not how. Swift and silent as he was, his eyes were burned and blinded by the stinging acid stream, the victim's weapon of self-defense; the blow missed the vital part, and a moment later, bitten through the wing and unable to rise, he was once and for all in his enemy's power. What a struggle for life and death in the withered goldenrod! Furious, ferocious, merciless, but silent! No shriek or groan of pain and no cry for quarter in the silence of the night—only the creaking of the forest branches in the dreary night wind and a fresh gust of rain among the fallen leaves and withered weeds!

Will the driving rain-clouds not lift a little when the fight is over? But no—the blackness of night falls upon the wood and clearing and the goldenrod which has lost its beauty; and the owl horn, faint and indistinct from the distant woods, is lost at last in the steady downpour of the dismal autumn rain.

Man was never intended to live out of relation with nature. You think of rows of city houses as so many graded prisons. Those who live in them, even in artificial luxury, are deprived of the very best that God prepares for us to enjoy.

E. P. Powell.

Lively doings on the ice.

PETER VALE'S SKATES

"I don't blame the boys and girls for leaving the farm when they grow up," said Mrs. Vale. "If I were young again, I should go to live in town, too. What is there to make them want to stay in the country, anyway? Now this winter——"

"Mother," interrupted ten-year-old Peter, who had been gazing intently out of the window at the falling snow, the first of the season, "mother, can I have a pair of skates this year?"

"Skates!" exclaimed Mrs. Vale. "Nonsense, child! What would you do with skates? Don't you see, the creek will be covered over with snow by to-morrow; and, besides, you couldn't learn to skate on that bit of ice anyway.

"Now, this winter, as I was saying, there's absolutely nothing for young folks to do out here, or old folks either, for that matter—nothing but sleep, and do chores, and get meals."

"That is all very well," said Miss Patten, "but what better off are they in the city? Of course there are libraries and theatres and skating-rinks; but I've had enough of the city with its noise and dirt. No more life in a city boarding-house for me! I prefer the farm."

Miss Patten was a country girl, born and brought up on the farm; but she had been at the Normal School in the city, and she had come back to the country school and to farm life with a better appreciation of what country life means. As a part of her training as a teacher, she had learned something about agriculture and farm management, and she was firmly of the opinion that farm life offers, or at least *should* offer, better attractions to the farmers' sons and daughters than the city.

"So Peter Vale wants to skate?" she said to herself as she walked home that evening. "And why shouldn't he? If the creek is too small why can't we find some place else?" But "some place else" is not always so easy to find! And after all the possible places had been considered, she found herself coming back time and again to the idea of making a rink in the school yard itself. Here was a floor of hard earth, a good pump to supply the water, and willing hands to keep the ice clear of snow.

There is no need to give any account of the way Miss Patten's plan was carried out. The rink was made—and without any expense—and it was just as much a success as an open-air rink made in that way could possibly be.

And when a pair of skates for Peter Vale arrived in Santa Claus's bag that Christmas, there was no one in the Glen Grove section that was better pleased than Miss Patten, excepting, of course, Peter Vale himself.

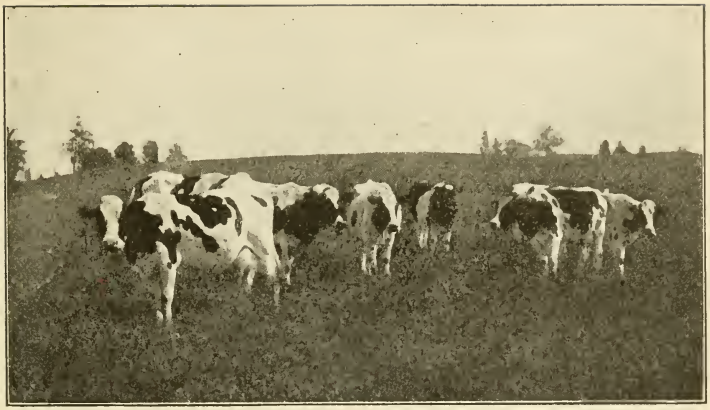
But just because the rink was a success, Miss Patten found that she had to face other problems which she had not expected. The young people of the section wanted to use the rink in the evenings, and this meant that the school itself had to be warmed and lighted and kept open a good deal of the time; for there were sure to be some of the young folks or their elders who did not wish to skate and who must have a place to rest. And then a bright idea occurred to Miss Patten: why not have a table with magazines, and farm journals and bulletins, and daily papers, and books, and a stereoscope with pictures, for those who preferred to remain inside? Why not, indeed, have a lending library, open at least a couple of nights a week, where those who wished to read might obtain good books? Why not—it was a pleasure to plan it, even if it never came true—why not have a special "social-centre" room built on to the school just for this purpose—with library shelves, and tables, and easy chairs, and pictures, and a gramophone, and games, and a big fireplace for the cold winter evenings? Why not? But, after all, these were only day-dreams. The thing to do just now, as Miss Patten saw it, was to make the school-room comfortable, and try, if possible, to provide some profitable way of passing the winter evenings.

To Miss Patten's surprise, the trustees fell in readily with her plan, and even went so far as to supply a stereoscope with pictures, and two or three illustrated magazines.

And when once the beginning was made, the part that remained was not difficult. Miss Patten's plan for the library was to have each family contribute one new book and one old one for lending purposes, while she herself undertook to see that the books were regularly exchanged. A scheme so simple as this was not difficult to carry out, and before the winter was over, the Glen Grove schoolroom boasted of half a dozen papers and magazines, a collection of the best agricultural bulletins, and the beginning of a neat little lending library.

Miss Patten's plans for next winter include a debating society, and a "young farmers'" agricultural club; but, as "next winter" is still a long way off, the success or failure of this new venture must belong to another story.

There is one supreme advantage of the country—one not always appreciated and used as it should be. There can be no doubt that country life offers far, far greater facilities for reading than is the case in town. True, we have our free libraries, and booksellers' shops. But the long, dark evenings that the countryman complains of—the starless nights and unlighted lanes; the two miles of peril and mud that prevent one going to the village concert—these things make reading a necessity, deep thinking a habit. The city may produce smartness, but character requires space.



On the way home.

MAKING THE DAIRY-FARM PAY

"I hear that Bingham has bought the Dexter farm," said Mr. Jones to his wife. "He's tired of the city and is coming back to live in the country."

"Bingham!" replied Mrs. Jones in some surprise. "What does Bingham know about farming now? He's been away from the farm for ten years. The Dexter place, did you say?"

"Yes, the Dexter place. He's going to make an up-to-date dairy-farm of it, they say. It's one of Dick's notions, I think. You remember Dick Bingham, don't you? He's twenty years old now and has just been at the Agricultural College. His heart is set on farming, and he will have nothing but a dairy-farm. So he has persuaded his father to put some of his money into it and give him a good start."

"I didn't think Bingham was such a fool as to sink his money in that sort of thing," continued Mrs. Jones. "Of course, they'll never make it pay." Then, after a pause: "Are you quite sure that Bingham has bought the place?"

Mr. Jones was quite sure of it and, as proof positive, a few minutes later Mrs. Jones saw with her own eyes the elder Bingham drive past and turn into the Dexter place, which was only a quarter of a mile up the road from the Jones farm.

"Of course, they'll never make it pay!" That was what the neighbors all said. But Dick Bingham had quite made up his mind that he would make it pay, notwithstanding anything that the neighbors might do or say. Upon one thing both he and his father were agreed—that they should count the cost of the undertaking in detail before going into it. They were both shrewd enough business men to see that a dairy-farm, or any other kind of farm, must earn enough to pay the interest on the capital invested in the farm, the buildings, the stock, and the machinery, besides paying for the labor expended upon it.

The Dexter place was sadly out of repair, but the soil was good—a fine clay loam—and the farm had a good stream running through it; and it was pleasantly situated a couple of miles from town and the railway-station. When the neighbors heard that the Binghams had taken over the place, they at once came to the conclusion that the old buildings would be torn down and that fine new dairy stables would be erected. But the old stables had been well built, even though they were out of repair; and after Dick and his father had looked them over, they concluded that they could be reconstructed so as to do for the pres-

ent at least, until the enterprise began to pay for itself. There were three things that Dick had determined to provide for his cattle—plenty of light, a proper supply of fresh air, and clean, comfortable stalls. Dexter's stables were dark and dingy, and all the fresh air which the cows ever received was supplied through the open door and a broken pane of glass in the single dirty window; and stalls and floors alike were made of plank, which it was impossible to keep clean, and which had been worn into holes by long usage. The first thing that Dick did was to put a row of windows in the whole length of the stable; open up a series of ventilating shafts, so that the cows would get fresh air without having to lie in drafts; and put in a rough flooring of cement, with proper gutters and platforms.

"You would never guess it was the same place," said Mr. Jones, when he reported the improvements to his wife. "I know Bingham talks a good deal of nonsense about the health of his cows, but I'm thinking all the same that I'll knock a few windows in our cow stable; and perhaps next year, if times get a little better, we can afford a cement floor in our stable, too."

There was one thing more that Mr. Jones might have added—that Dick Bingham wouldn't put up with a dirty, muddy barn-yard, or dirty stables either, for that matter. And so the Dexter barn-yard was cleaned up and kept clean, and if Dexter had come back to live in the place, he might have put away his top-boots that he had to wear so as to wade through the mire and filth of his own stable yard. When Dick had finished making his improvements, one part of the barn-yard was roofed over, and the ground beneath was covered with good straw litter, but the rest

of the yard was drained and packed hard, so that even in the muddiest weather the ground was clean and dry.

When the Binghams bought the Dexter place they took over the machinery and the live stock, and a few weeks after they had taken possession they offered some of Dex-

A sanitary and conveniently arranged dairy barn.

ter's cattle for sale. Mrs. Jones bought one of the cows at a bargain, as she thought; but if she had known Dick Bingham's real reason for selling it, she would have thought a good deal less of her purchase. The farmers of the district as a rule were content to take their dairy herds as they found them, and they had no means of knowing whether a particular cow was paying them or not; but Dick took measures to test each cow's milk and keep a record of it; and those cows whose record was low were at once sold and replaced by good, paying milkers.

So far, in the opinion of Dick and his father, everything had gone well. They now had a good stable and barnyard and a good dairy herd, and they had no difficulty in finding a market for their produce. The only thing that still remained for them to do was to provide for the proper feeding of the cattle. When Mr. and Mrs. Jones "happened in," one evening in November, they found Dick seated at a table covered with papers, apparently working out a complicated problem in arithmetic.

"Seems like old times," said Dick, "when I was at school and used to have home work to do—only these are not the kind of questions that we had to do then. I used to have to find the cost of papering walls and carpeting floors, but now I have to find out what is the best kind of feed for my cows, and calculate what it will cost."

"You see," he went on, "with dairy cattle you have to be particular what kind of feed you give them—so much protein for each cow, so much carbohydrates, so much fat; and I am trying to work out what they call a 'balanced ration,' so as to give every cow just the right amount of each."

Mrs. Jones looked bewildered. She had never heard of such things as proteins and carbohydrates, and she did not have a very clear idea what Dick meant by "balanced rations." Perhaps Dick saw this, for he went on with his explanation without waiting for her to reply.

"Silage is good for cattle," he continued, "and so are the legumes, such as clover and alfalfa; but they do not contain enough protein, and so I measure out so many pounds of each, according to the cow, and then I add other food, such as bran and meal, which contain a good deal of

protein and fat, so that the cows' feed will be well balanced."

Mr. Jones had a good many questions to ask about the dairy and the farm itself; and then Dick's father, who had been to market, came in, and the conversation turned to old times and the old friends before Mr. Bingham had first moved to town.

"Am I glad to get back to the country?" laughed Mr. Bingham. "No need to ask that question. I've tried both ways of living, and the country's the place for me. But," he added, looking toward Dick with a knowing glance, "a good deal depends on knowing *how* to live in the country, and I'm not sure that I should enjoy living here quite so well if it were not for Dick. We both get a good deal more pleasure out of farming because Dick has learned how to farm; and it would not be much fun trying to run a dairy-farm if Dick had not learned how to make the dairy-farm pay."

Give your farm stock every possible care. Do not overwork them or ill-use them. Do not let them suffer from exposure to rain and cold. Feed them at regular hours, and make a study of the kinds of food they require. Good shelter, good food, clean quarters, and kindly usage —this is a form of investment which is sure to bring ample returns.

Out on the frozen uplands.

THE PROMISE OF BREAD

Out on the frozen uplands,
Underneath the snow and sleet,
In the bosom of the ploughland
Sleeps the Promise of the Wheat;
With the ice for head and foot stone,
And a snowy shroud outspread,
In the frost-locked tomb of Winter

Sleeps the Miracle of Bread!
With its hundred thousand reapers
And its hundred thousand men,
And the click of guard and sickle
And the flails that turn again;
And drover's shout and snap of whips
And creak of horses' tugs,
And a thin red line o' gingham girls
That carry water-jugs;
And yellow stalks and dagger beards
That stab through cotton clothes,
And farmer boys a-shocking wheat
In long and crooked rows;
And dust-veiled men on mountain stacks,
Whose pitchforks flash and gleam;
And threshing-engines shrieking songs
In syllables of steam;
And elevators painted red
That lift their giant arms
And beckon to the Harvest God
Above the brooding farms;
And loaded trains that hasten forth,
A hungry world to fill—
All sleeping just beneath the snow,
Out yonder on the hill!

A Western wheat-field.

WHEAT, FLOUR, AND BREAD

Imagine, if you can, that a grain of wheat has grown very large, so large that you can easily see all its parts and can cut it to pieces with a knife so as to see how it is formed. You will, of course, notice the "brush" of fine hairs at one end and the "crease" or furrow which runs down the front of the grain; but these things are on the outside, and the important thing for us is to see the inside of the grain. Let us cut our big kernel of grain in two across the middle and look at one of the ends that are cut. There is nothing very wonderful here—just a fine white substance covered by a rind or skin. If we could examine this rind closely with a microscope we should

see that it has a lining of plant cells which are closely packed together. This rind or skin is generally spoken of as the "bran." The white substance is called the "endosperm," and it is this substance of which flour is made.

Now, if you will look at the lower end or "base" of your kernel of wheat you will notice that the rind is rougher than elsewhere, and if you will soak the grain in water so that the rind will peel off you will find underneath it, on the back of the grain, a little egg-shaped body, which forms the embryo, or "germ," from which the grain grows. When the seed grain is planted, it swells with the warmth and moisture of the ground, and the "germ" begins to grow and sends out roots into the ground and blades of grass into the air above. But, in order to grow, it must have food. At first it uses up the food contained in the endosperm, and then the roots begin to suck up food from the air.

If the grain is not sown too thickly, several stalks grow up from the same root and finally these stalks "head out." Like other plants, the wheat plant has flowers, but the flowers are small and are protected by a rough covering or sheath of "chaff." In time the flowers go to seed and when this grain, or "seed," ripens, it is threshed out, and later it is ground into flour.

Long ago, when people first began to grind wheat they crushed it between any two flat stones that happened to be near at hand. A little later they kept two flat stones specially for that purpose, one of which was fixed in the ground while the other was turned on it. When treadmills, windmills, and, later, water-wheels came into use, the grinding was done at mills by men who understood

how it should be done. But in all these ways of grinding, all the different parts of the wheat were left together in the flour. Later, the millers found a method of sifting out the coarser parts.

The grinding of the grain and the sifting of the flour have gradually been improved, until to-day we have mills covering acres of ground, and making thousands of barrels of flour each day. In these mills, they are able to separate the different parts of the wheat, and can make ever so many different grades of flour.

In the modern flour-mills the wheat is ground by what is known as the roller process. In the course of grinding, the wheat usually passes through six pairs of rollers before the grinding is completed. In the first, the miller seeks just to break the grain into pieces. After sifting, the coarse parts, called the "tailings," are passed on to the next pair of rollers, where the flour is removed. After the wheat has passed through all the rollers in this way, the flattened pieces are almost entirely free from flour and are classed as bran. In all such methods of grinding wheat, the centre part is rubbed off first; and, being free from bran particles, it makes very white flour. This forms the grade of flour known as "patent." That got by grinding closer to the bran is known as the "baker's" grades. Still closer grinding forms the low grades of flour. Generally speaking, the more bran particles there are in the flour, the lower it is graded. The outer part of the wheat, nearly all of which goes into the bran, contains much more bone-making material than the flour. Because of this, some say that the "patent" and "baker's" grades of flour are not so good as the flour made by the old stone process.

During the first half of the last century a man named Sylvester Graham, who lived in the New England States, urged the use of flour made from the whole wheat, including the bran; and flour made in this way is known as Graham flour. But it is hard to grind the bran so fine that it will not have a bad effect on the digestive system; and to overcome this, a machine has been invented which peels off the outer coat of the wheat grain. The remainder is ground, and is known as "entire wheat flour." Such flour is always dark in color, because the germ is ground with it, but it contains more bone and fat producing material than flour made in any other way.

It is very difficult to be sure of the exact quality of a flour, but there are certain general rules by which a good bread flour may be judged quickly. It should be white, with a faint yellow tinge, and it should fall loosely apart in the hand after being pressed. When put between the teeth it should "crunch" a little, or when rubbed between the fingers it should be slightly gritty. But possibly there is no one point which determines the quality of flour so much as the amount of gluten it contains. Some one asks: "What is gluten?" Have you ever made gum by chewing wheat? Nearly all children in the country have done so. The gummy part is gluten. If you have ever tried to make gum from oats, barley, or corn, you have failed; because these grains do not contain gluten. It is because wheat contains this substance that it is so much used for bread-baking. If you take a little flour and add enough water to make it into a stiff dough, and allow it to stand for an hour, and then take it between your fingers and knead it in water, you will see the water

get white with the starch part that is separating from the dough. Continue the washing until the starch is all removed. What remains is gluten. Notice how tough and elastic it is.

Some varieties of wheat contain more gluten than others. There is also a great difference in the quality of glutens: some are tough and can be pulled out like a piece of rubber; others are soft and break when pulled. The wheat which contains the most gluten of a good, tough, elastic quality will make the best flour for bread-making. For this reason, what are known as spring wheats are usually better than those known as fall wheats. Millers call a flour which contains good gluten "strong," and one that contains poor gluten "weak."

Now that we have learned something about flour, let us see if we can learn something about the changes that take place when it is made into bread. If you have ever tried to wet flour with water, you will have noticed how hard it is to get the flour all wet. That is because the flour is so very fine. One of the main objects of making the flour into bread before it is eaten, is to separate these fine particles so that the digestive fluids of the stomach may more easily mix with them. The baker commences by mixing the flour with water. He also puts in yeast, and mixes it all together so thoroughly that the water and yeast come into contact with each little particle of flour.

Yeast consists of countless numbers of small plants known as yeast plants. When the paste of dough containing yeast is set in a warm place the yeast plants begin to grow by feeding upon the sugar in the flour. The sugar

is in this way changed into alcohol and a gas called *carbonic acid gas*, which is familiar to us in ginger ale and similar drinks. When the dough is heated, the heat causes the bubbles of gas to expand, or grow large. If it were not for the gluten in the dough, the gas would be able to force its way out; but the gluten stretches like elastic and holds the gas in, and the bread swells or "rises" as a result. If too much yeast is added to the flour, too much gas may be formed; and the gas may even spread out the gluten so far that the walls of the bubbles may break. The tougher and more elastic the gluten, the better the dough will rise, and the lighter the bread will be. This is where good gluten is valuable.

Take a slice of bread and examine it carefully. Notice the little openings or holes in it. These little holes were formed by the gas being held in by the gluten, as just described.

After the yeast has worked enough, the dough is put into a hot oven. Here the heat kills the yeast plants, drives off the alcohol, and causes the gas to expand further.

R. Harcourt (adapted).

Winter is the time to do much good reading. A tramp over real fields is to be preferred to a tramp in a book. But a good book is pretty nearly as good as anything under the stars. You need both fields and books. And during these cold days—impossible days, some of them, for work afield—you will read, read!

Dallas Lore Sharp.

AMONG THE EVERGREENS

The name "evergreen" is, of course, only a popular name for the five or six kinds of trees whose leaves, or "needles," remain on the trees all the year round. When we speak of the evergreens, we generally think of the pine, the spruce, the fir, the hemlock, and the cedar.

One of the most conspicuous objects in almost any landscape, in the wilder parts of the country at least, is the white pine, which towers up, tall and irregular, over the surrounding rocks and the smaller undergrowth beneath. Very hardy it is, for it may often be found growing apparently out of the solid rock, its roots stretching down through some narrow crevice to the scanty soil from which it draws its nourishment. This is the pine which you will meet with most commonly in all parts of the country where the soil is dry and sandy; and it is perhaps, after all, only a matter of chance that it is not our national emblem, for in the New England colonies two hundred years ago it was the device that was stamped on the silver coins, which were known as "Pine Tree Shillings."

Besides the white pine, you may also meet with the beautiful red pine, a shorter, denser, and more regular tree, which is often used for ornament and shade. It may be easily distinguished from the white pine by the fact that its needles grow in pairs, while those of the white pine grow in tufts of five, and that its cones, instead of appearing singly, are found in clusters of two or three.

Early last spring, during several days, I watched a sap-

sucker "tapping" one of these red pines for its sap, and the process was an interesting one indeed. He chose the side of the tree exposed to the sun, because the sap flows more freely there; then he proceeded to chisel out five or six rows of holes in the bark, about half an inch apart, until he had thirty or forty in all. This task finished, he flew off; but in the course of half an hour he returned and licked up the sap that had gathered in the holes, together with the insects that had been attracted by the sap. Then he went away again, only to return in another half-hour; and this sap-gathering was kept up regularly for several days. Indeed, I have no doubt that he had a good many other trees in his "sugar bush," and that he spent the intervals during his absence from the red pine in going his rounds from tree to tree.

Another evergreen that is most common in our northern woods is the spruce, in its different varieties, black, white, and red. If the white pine is the most valuable timber-tree, the spruce, on the other hand, is the most valuable for pulp wood. Its importance may be judged from the fact that one of the large dailies of New York uses over two hundred cords of spruce per day in the manufacture of paper. The spruce that we are most familiar with about our lawns and streets as an ornamental shade-tree is the Norway spruce; and, as its name implies, it is not a native variety. It may readily be distinguished from the native species by the size of its cones, which are at least five or six inches in length, while those of the black spruce, for instance, are scarcely a quarter of that size. The thickness of the branches of the spruce make it a fine nesting-place for certain of the birds—the robin, the blue-jay, the cat-

Among the evergreens.

bird, and the chipping-sparrow; and in the cold winter nights it has usually a motley crowd of tenants, English sparrows, waxwings, jays, juncos, and winter birds of all kinds, who find in its kindly shelter a protection from the cold.

A tree which looks very much like the spruce, but which is found only in the north, is the balsam fir. The balsam fir differs from the spruce in several marked respects. It is not so tall; its bark is smoother and is covered with blisters containing "balsam," and its needles are fragrant. Moreover, the needles of the spruce are sharp and grow thickly from all parts of the stem, while those of the fir are blunt and grow in two rows along the sides of the twigs. The balsam fir is a great favorite with most people, not only on account of its fragrance, which makes its needles valuable as a filling for pillows, but because it is one of the trees from which the genuine, old-fashioned Christmas tree is still made.

The hemlock is another evergreen of the northern woods, which is interesting for a variety of reasons. In the late summer and autumn, at least, it is one of the sombre trees of the pine forests, rising tall, dark, thick-topped, and gloomy, but beautiful nevertheless. Its needles are short and flat, its branches dense, and its cones small and delicately formed. Its bark is the well-known tan-bark used in curing leather; and even if a farm is otherwise barren and rocky, the farmer may make at least a fair income if the rockiest portions of it are covered with a good supply of hemlock, which is doubly valuable on account of its bark and its wood.

Then, too, the hemlock, even when half-rotten and

lying on the ground, is of interest to the lover of nature, on account of the beautiful fungus that grows from its trunk. These fungous growths are sometimes very large, measuring over a foot in diameter, and they are covered with a delicate brown bloom which makes them look like the branching horns of the deer in the velvet. When this velvety bloom is brushed off, the fungus is bright mahogany in color, and is scarcely less beautiful than the original brown.

But the hemlock has still greater attraction for the boys, for it is the favorite feeding-ground of the porcupine. This dull-witted, slow-footed vegetarian lives chiefly on the fresh twigs and bark of the birch and the hemlock, and he may sometimes be seen, late in the afternoon, scrambling clumsily about in the thick hemlock top before he retires for the night to his shelter in the rocks.

Winter by the brookside.

A BETTER HOUSE

(Concluded)

In the furnishing of houses great changes have been made since our great grandfathers' time. Many of the old log cabins had little furniture besides tables, chairs, and beds. The beds were made of four poles, with basswood bark woven between them. The chairs and tables were roughly made and without ornamentation. But later, when flax and wool were raised and when spinning-wheels were invented, curtains and carpets of home manufacture made the pioneer homes more comfortable. Then came a time when it was thought that articles which came from the stores were better than those which were home-made. As a result, "store" carpets, curtains, chairs, and other furnishings came into use; and to-day in our houses there are few home-made articles to be found.

But have all these changes in the furnishing of our homes always meant a real improvement? Let us look into an average living-room in a farmhouse and see whether there are not further changes we might make, that would produce for us, as the title of our lesson says, "a better house."

Here we are! Let us push up the window shades. We must let the sunshine enter if our room is to be cheerful and healthful. But look at the curtains! They are much too long and they spread over the carpet in such a way that one cannot go near the windows without stepping

on them. And see! Now that I have pushed them back, what a lovely view! This window frames in that beautiful old apple tree and gives a glimpse of the front lane beyond. Suppose we take away those thick lace curtains, and hang instead some curtains of thinner material. And let us have them come only to the lower edge of the window—so that they will not cover up the fine lines of the well-built window-frame. Then, too, we shall keep them clean more easily if they are short. Now, see the change! Our windows are pictures now—for we can see the outdoor loveliness through these thin curtains—and the woodwork of the window forms a frame for the picture.

But what a strange, crowded feeling we have in this room! And yet it is not small. Can you see the cause? The designs in the wall-paper and in the carpet are so large and striking that they seem to "jump up" at us, and there is not a spot where the eye may rest. Let us put a plainer paper on the wall—one with a narrow stripe or with no pattern at all. Then, if we replace the staring carpet by a rug, which can be easily lifted and frequently cleaned, we shall find that our room has a totally different appearance.

How much better our pictures will look now that we have a plainer paper on the wall, to serve as a background for them. But we cannot hang these pictures as they are. Look at this Madonna! See how the picture is lost in the confusion of the frame, which attracts our attention more than the picture itself does. A frame should be merely a division of the picture from the wall, and there is something wrong about it if it is noticeable. We shall put a

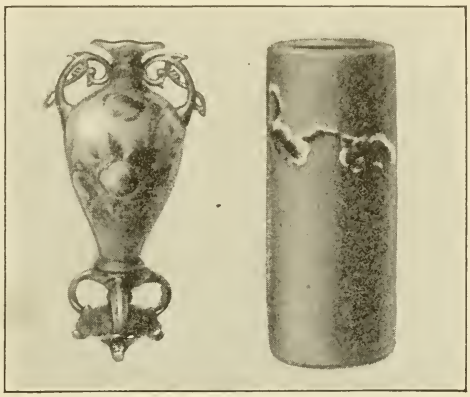
simple, dignified frame on this picture, and then the full beauty of the painting will be brought out. Generally, bright gilt frames are a mistake in a house. They were

The frame should not attract too much attention.

first used on richly colored paintings placed in dim cathedrals, where the gold of the frames harmonized with the golden vessels on the altar. But in a small room a gold frame usually becomes too noticeable, and is in poor taste.

The room looks better now; yet it has a crowded appearance still. Look at the array of bric-a-brac on the mantel and on the piano. The wax figures are pushing those vases almost over! Suppose we apply an old test here. Let us ask of each of these articles: "Is it useful? Is it beautiful?" If it is neither, it must go! Here is a vase, slender near the base, larger farther up, and the mouth is so narrow that it cannot be used for a bouquet.

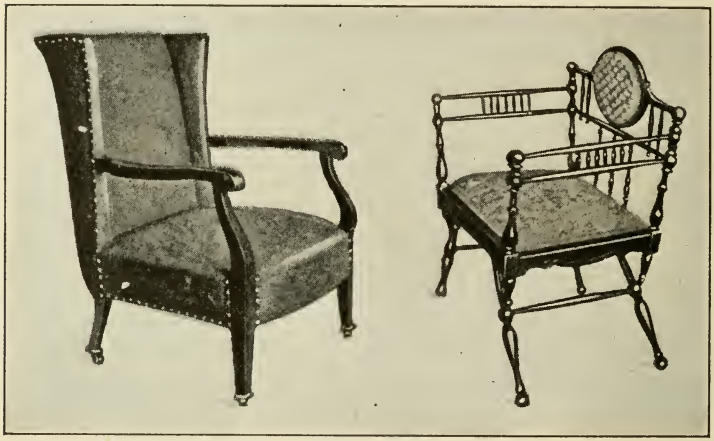
It is not beautiful, for it gives us an uneasy fear that it may topple over any minute, while an object of beauty should give us a feeling of ease, and of satisfaction in its proportions. Besides, the glittering gilt of the handles and base is not in keeping with the simple beauty of flowers. But here, just beside this, is another vase, and it is truly lovely. The shape is ideal for long-stemmed flowers, and its color is such as will not be out of harmony with any flowers we may choose to use. Many of the other things on the mantel are beautiful as well as useful; but there are too many. If we remove some, there will be space enough between the others to allow our minds and eyes to rest as we look from one to the other.



Flowers always look best in a simple vase.

And now that we are through with the mantel, what do you think of the chairs in this room? Here is one I like very much—and here is one I dislike. Can you see the difference? This one is simple in line, strong in workmanship, stands true on its feet, and is covered with burlap, which does not hold the dust. It is a roomy, comfortable chair. But the other is cushioned in velvet and plush—impossible to keep clean—and the "spindle" work,

which is meant to be ornamental, breaks easily. In such a chair one would scarcely dare move lest it give way! I am glad there are more of the first sort than of the second in the room.

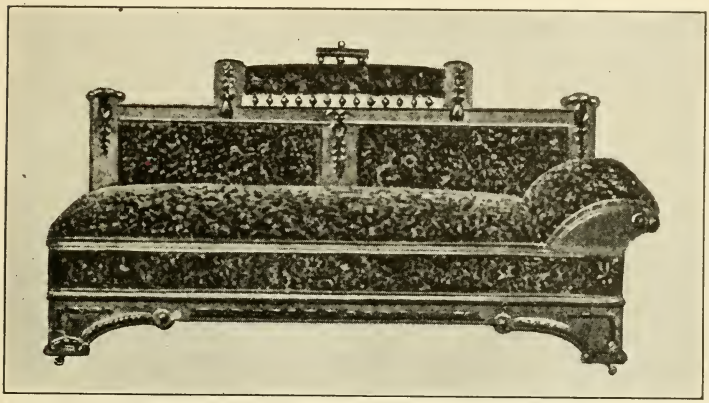


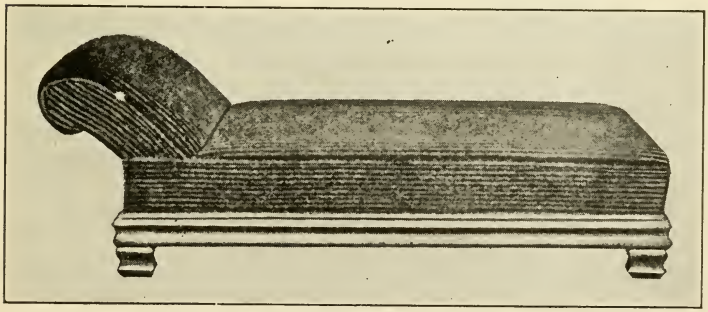
A roomy, comfortable chair is better than one that is merely ornamental.

I am sure, too, that you will agree with me in wishing to have this couch made over, if possible. The ornaments glued to the back stick out uncomfortably, and the frame, as a whole, has ugly angles. How much better it will be if we can have it made over to look like the second couch in the illustration. The latter is simpler in design, and the dark-green corduroy covering is not so glaring as the bright-red plush of the other.

You noticed that I put aside the cushions just now, in order to see the couch without them. Let us examine the cushions next. Don't you think, since the object of a

cushion is to afford comfort, that it is in bad taste to have one like this—with a head painted on in color? If you



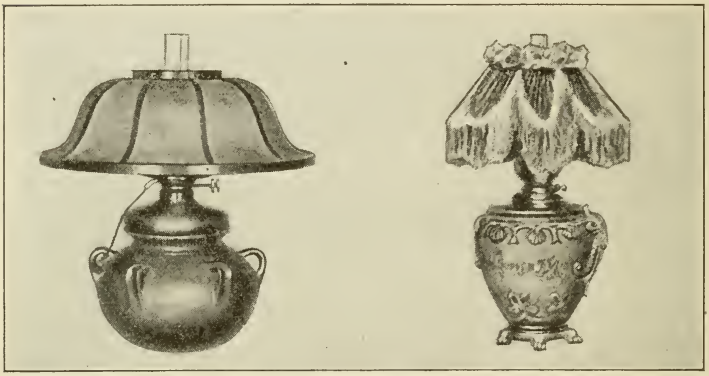


Choose furniture which is simple in design.

like to look at it, it would be better to frame it as a picture, but what possible excuse is there for it on a sofa pillow? The cover cannot be cleaned, and one would hesitate to settle down for a nap on anything so gaudy.

Here are several that are much better—the border ornament on this does not interfere with the comfortable use of the cushion, and the cover is of linen, which can be washed any number of times.

But are you growing tired of our visit? Just before you



The lamp on the right is of little practical use.

go, I want you to look at the lamp on this little table, and then at the one by the book-case. You see there is a great difference. In this one, notice how dusty the shade is with all its ruffles; and then, too, the cheap decoration of the bowl makes it difficult to keep clean. Its outlines are in poor proportion, and the whole affair is too showy for practical use. But the other lamp has plain materials, the base is comfortably large, and the wide-spreading shade sends a splendid light over the table.

I suppose the reason that we find in the same room articles so totally different as these two lamps, is that the furnishings have been bought at long intervals, just when

the owner could afford something new. There is no reason why a room furnished gradually, one piece at a time, should not be as beautiful as one completely furnished at the outset. But to do it successfully we must plan our room beforehand and know how we wish it to look when completed. What should you think of a man, setting out to build a house for himself, who would buy some bricks this month, a can or two of paint the next, perhaps some odd pieces of scantling of different lengths the next, and so on, at haphazard, without any definite plan, hoping that somehow it would all fit in! Yet that is what many of us do in furnishing our homes—where it is just as foolish.

Plan your room. Decide the color scheme you wish to follow, taking into consideration the lighting of the room and its use. Treat the walls as backgrounds for pictures and furniture. Choose and frame your pictures carefully; then hang them where they can be seen to the best advantage, and in such a way as to form pleasing lines on the wall space. Consider the windows as pictures. One lady in her beautiful home on the Saint Lawrence River leaves her windows free of all draperies and curtains, because they frame in such scenes of loveliness. You are fortunate in having your homes in the country, where your windows look upon green fields and woods, instead of upon bare brick walls, as is so often the case in crowded cities.

Select your furniture for use—not for ornamentation. Therefore choose furniture of good wood, of honest workmanship, and of a design suited to the nature of the room for which it is intended. Let us have no *sham* about

our homes; let everything be *real.* Then, with every purchase we make, every new treasure we gain to add to the beauty of our home, we shall be making of it "a better house."

M. B. Stevenson.

THE AWAKENING OF SPRING

FROM "IN MEMORIAM."

Now fades the last long streak of snow,
  Now bourgeons every maze of quick
  About the flowering squares, and thick
By ashen roots the violets blow.

Now rings the woodland loud and long,
  The distance takes a lovelier hue,
  And drowned in yonder living blue
The lark becomes a sightless song.

Now dance the lights on lawn and lea,
  The flocks are whiter down the vale,
  And milkier every milky sail
On winding stream or distant sea;

Where now the seamew pipes, or dives
  In yonder greening gleam, and fly
  The happy birds, that change their sky
To build and brood; that live their lives

From land to land; and in my breast
  Spring wakens, too; and my regret
  Becomes an April violet,
And buds and blossoms like the rest.

Alfred, Lord Tennyson.

SPRING

THE FIRST GARDEN

And the Lord God planted a garden eastward in Eden; and there he put the man whom he had formed

And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of the knowledge of good and evil.

And a river went out of Eden to water the garden, and from thence it was parted, and became into four heads. . . .

And the Lord God took the man, and put him into the garden of Eden to dress it and to keep it.

Genesis ii : 8–10, 15.

A FLOWER LOVER'S CREED

I believe in roses because they are the most perfect flowers that grow.

I believe in the crocus, the snowdrop, and the bluebell because they are brave and usher in the garden year.

I believe in the lily of the valley because it is fragrant and hardy and loves the shade, likewise the sun.

I believe in corn-flowers—sometimes.

I believe in the iris, though I have none, for it is a wonderful work of God.

I believe in the homely golden-glow because it blooms so profusely in the fence corner.

I believe in China asters because I love their colors.

I believe in morning-glories because they aspire to heaven.

I believe in the lowly nasturtium because it gives, and asks not, from June to November.

I believe in hollyhocks because nothing looks so well against an old white house.

I believe in hardy chrysanthemums because they defy continuous frosts.

I believe in dahlias because I can pick them with a clear conscience.

I believe in the lilac, weigelia, and syringa because they love old dooryards.

I believe in flowers from the depth of my being because they exist for beauty and are perfect, complete things. They are generous and innocent, and I can help them to grow.

WALTER A. DYER (ADAPTED).

A GOOD START

The country boy who wishes to have early garden produce to sell must make use of some artificial means, such as a hotbed or a cold-frame, in order to give his plants a good start. If he relies on raising his plants in his garden in the usual way, he has to wait for the warm weather to come before his plants will grow, and then he does not get the best price for his produce; but if he can provide this 'warm weather' in some artificial way, he may be sure that his garden produce will be ready for use early in the season, no matter what the weather outside may be like.

The easiest way to produce artificial heat for plants is by the use of a "cold-frame." A cold-frame consists simply of a box or frame inclosing a small earth plat, which is covered over with glass. The frame keeps out the cold, and the sun shining through the glass warms the air inside, so that with good soil and proper moisture the plants are able to grow. By means of a cold-frame it is possible to give garden plants at least a month's start over those which are planted in the regular way.

But by means of a hotbed a much earlier beginning may be made. A hotbed, however, is a more difficult and more expensive thing to construct than a cold-frame. It consists, in the first place, of a pit, or excavation (about four feet deep), inclosed by a frame made of wood or concrete. The bottom of this pit is sometimes lined with stones, bits of glass, pottery, etc., to help the drainage. The pit is then filled with manure (mixed with dead leaves or straw)

to the depth of two feet; and after the manure has been exposed to the air for some days so that it may cool off sufficiently, it is covered by a bed of good loam about six inches deep. Then the seeds are planted and the glass sashes are fitted over the top, as in the case of the cold-frame.

In the hotbed it is the manure that supplies the heat, for when manure ferments it gives off both heat and gas. Since the hotbed does not depend upon the sun for its heat, seeds may be planted in it much earlier than in a cold-frame. It may, indeed, with proper care, be kept going throughout the winter, so that a supply of lettuce, radishes, and other "greens" may be provided throughout the year.

After the seeds are planted, it must not be forgotten that the soil needs both air and moisture. Air is usually supplied by raising the sash a few inches during the day, if weather permits. Care must be taken, however, to see that the frames are properly covered over at night in cold weather, and old carpets, newspapers, mats, etc., may be used for this purpose.

Who would not have a garden in April? To rake together the rubbish and burn it up, to turn over the renewed soil, to scatter the rich compost, to plant the first seed or bury the first tuber! It is not the seed that is planted any more than it is I that is planted; it is not the dry stalks and weeds that are burned up, any more than it is my gloom and regrets that are consumed. An April smoke makes a clean harvest.

JOHN BURROUGHS.

The gardener's friend.

THE GARDENER'S RIGHT-HAND MAN

Have you ever noticed, after a warm summer shower, a great number of little toads hopping about along the roads and in the fields?

They seem to have come quite suddenly, and some people will tell you that they came down with the rain! But this is nonsense. True, they often appear at the same time as the rain, but they do not come from the sky with it. It is from the muddy margins of the pools where they have lived their tadpole lives that they crowd forth to enjoy the shower. For, only a short time before, these little toads were pollywogs, all heads and tails—living happy lives in ponds and pools, and they still like to have their skins wet.

When they are just hatched from the eggs, these toads

are queer, shapeless-looking objects, and breathe by means of gills, as fish do. But soon, besides the tail, which becomes smaller and smaller, a pair of hind legs can be seen, and a little later fore legs come, and the tail disappears altogether. Within little more than a month from the time the eggs are laid, the toads, besides having grown four legs, begin to breathe through lungs, like other land animals, and are ready to leave the water for a new life on land. But they are a little tender yet, and they wallow about the edge of their former home until some day a warm shower of rain tempts them to go farther, and out they hop, like boys going off for a holiday, eager for new sights.

Alas! Many of them meet trouble at once. As they leave the water, snakes may seize them, ducks are on the watch for them, crows and hawks consider a fresh, young toad a choice tidbit; and if they do get safely past these enemies, careless people passing along may crush them to death.

The toad that escapes these perils continues to grow very rapidly, feeding greedily on flies, slugs, and other insects, which he catches with his tongue. And a curious tongue it is! It is fastened to the *front* of his mouth, is free at the other end, and has on it a thick, sticky fluid. Out he flashes his tongue, so swiftly that one can scarcely see the movement, and the ill-fated insect is caught a prisoner on the sticky tip. The toad has an enormous appetite and eats up very many insect pests. Thus he is justly called the "gardener's right-hand man."

Young Mr. Toad is very particular about his appearance. Every few weeks, when he is young, he must get

rid of his warty skin, which is becoming too tight for him, and have one that is new, smooth, and glistening. How does he make the change? Very simply: the old skin splits along the back and legs and beneath, and the toad pulls it into his mouth and swallows it! When he is older, he does not grow so rapidly, and so changes his skin, or *moults*, only about four times a year.

You will wonder what the toad does in winter, when insects are hard to find. His winter's lodging is a simple matter, however, for he finds a soft spot in the earth, works himself backward into it, and goes to sleep with the grass, flowers, and trees. In the spring he wakes and makes his way to a pond, where, above the booming of bullfrogs, you may hear his trilling, as he sings a swelling love song to his mate. It is a pleasant sound—a "drowsy drool that brings your feet to loitering in the deepening dusk." The eggs are laid in chains of jelly-like globes, and soon the pond is alive with a multitude of new little pollywogs, ready to repeat the life story of the older toads.

Try making a pet of a toad. You will not get warts by contact with toads, and they are easily tamed, showing a fair amount of intelligence. By watching their manner of living you will learn scores of interesting things about these harmless, useful little creatures.

M. B. Stevenson.

A garden! To grow one's own vegetables, to nurse one's own flowers, to rear one's own chickens, to milk one's own cow—and to keep one's own carriage. This is to be personally acquainted with the universe.

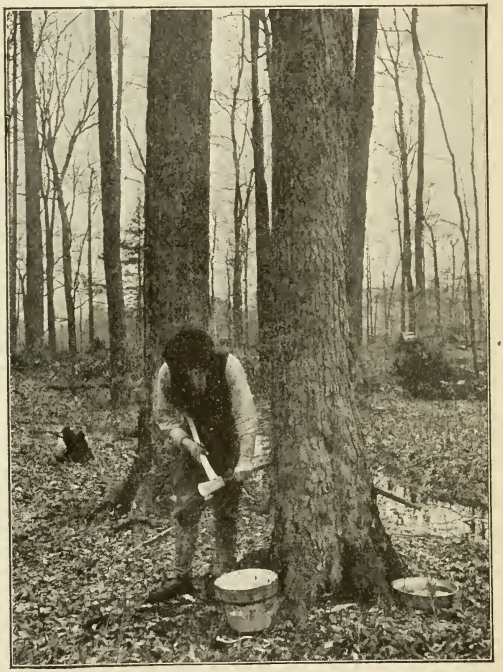
MAPLE-SUGARING

"It is time to tap the trees," said our father; "I think the sap will run." All that day he sawed elder sticks, in foot lengths, and pushed out the pith. These, when sharpened, made excellent troughs to conduct the sap into pans and buckets. Early the next morning, while the frost held the ground, we loaded a stone-boat with all sorts of pans and pails and with the elder spiles that we had made, and with them we took an auger and a mallet. The sun came out warm in the glen, but a sharp north wind slipped over the hill occasionally, to remind us that March was not quite ready to leave the scene. It was the time when winter and spring are wrestling.

"Ah," said our father, as he blew on his fingers, "winter dislikes to let go." Then he began to bore holes in the south side of the great maple tree—two hundred years old—and we boys drove in the spiles and set the pans. The sweet juice began at once to ooze out through the elder sticks and then to drop into the buckets. I can hear it now! That first drop, drop, against the tin! Out of a few of the larger trees, in the warm hollows, where the wind could not find its way, the sap spurted in little streams. The bees came from their hives and flew about our heads, alighting on the chips to get a taste of the sweets. A butterfly flitted, and tasted, and flew again to find a sweeter chip or perhaps a safer spot.

"Boys," said father, "it is time to swing the kettle, for with this run we must begin to boil before night." To be

sure! For the pans were nearly full by noon, as we ourselves were half full of the sweet stuff—and we could smell the boiling sugar in our anticipation. Down in the very



Hanging the sap-buckets.

heart of the glen we drove strong crotched sticks; and across these we laid a stout ash pole. On this the ten-pail iron kettle was hung with a double hook. There were no patent evaporators in those days; but that did not worry us; our sugar should be the best. Little Tom ran to the

house, which was a quarter of a mile away, with two pieces of hemlock bark to bring us coals. For in all the world there was not at that time a single match! Did we not by "match-making" mean making a very different thing? But you should have seen how well nature cared for us without matches. By order of Providence hemlock bark curled up just enough to hold a dozen big maple coals, and these another bark would cover from the wind. We had already gathered bunches of dry grass, with dry twigs, and more hemlock bark. I can smell it to this day. The delicious resin as it touched the coal! Then Jim quickly took the coals and blew them with all his might. It was a critical moment, and it needed a deal of breath. First a single thread of smoke came out and wound its way inquiringly up into the air; then a puff of smoke blew out straight into the eyes of Jim; and other puffs one after another into every other eager pair of eyes that bent over the problem. Bless me, how does smoke know so much? Jim's face was in a whirling cloud and his eyes became watery, but he would not be beaten. At last a red jet—a flash—a little hesitation—more rolls of smoke—and then the flames burst up and grappled with the bark and sticks. Yes, indeed! now it understood what was wanted. Maple-sugar time had come, and sap must be boiled. The fire had business on hand.

Our father shouted cheerily from the top of the hill: "Behold how great a matter a little fire kindleth!" "Yes!" we answered; and now we are ready to gather the sap. Each one first stood himself in the middle of a huge hoop; and this hoop lay on the top of two pails, which were so held apart that they could not swing against the legs of

the bearer. Then we went from tree to tree and emptied the pans into our pails. When these were full, they were emptied into the kettle over the fire. It was not light work, but it was work full of good cheer; for what would not a boy do to get at a plenty of maple sugar. Soon another kettle must be swung, and into that we dipped the thickening sap, while we still poured fresh sap into the first kettle. Work should never go alone; and as for fun, it cannot go alone. Let them go together, I say; that is the true way.

The woodpeckers were also tapping the trees—the red-headed and the yellow-throated—and they came very close to us; for no woodpecker fears a human being. Why should he? Is he not doing us good service, pulling the grubs from the trees? It must have been the second morning that a robin's song was heard—clear, glorious, triumphant, and far-reaching. I do not doubt that song was the echo of one to the south, a mile away or more; and that a whole chain of singers—a complete line of couriers—reached to the flocks in the Southern States. But of that we did not have time to think. All we cared for was the grand fact that the robins had come back again. And while we were in the excitement over our redbreast, came a thin, fine, silvery note up the swale, from the first bluebird—it was just as far away as the ear could catch it.

The kettle of thickest syrup was needing a good deal of attention. Jim was frequently dropping in a bit of colder material to prevent it from boiling over. It would rise in a mass of deep chocolate-colored bubbles and often reached nearly to the top, but Jim understood that it must not boil over.

About noon the little mother appeared, winding about the knoll into the glen, with a basket on her arm nearly as big as herself. The robins sang harder than ever, and the woodpecker rapped for order. Jim ran to meet her and to carry the basket, while Tom and I lugged a dry log near the fire for a seat. "Well," said she, catching her breath, "this is work; this is earning your bread and salt; and you shall have it more and more." And then she looked up at the birds, and said: "And you, too, you little darlings! You shall have your dinners." Then she gave half a dozen bones for us to tie to the trees where the birds might peck at them—nor were the bones without meat. The squirrels came into the branches overhead, and, looking down curiously, said, "Cht! Cht! Cht!" "To be sure," said the little mother, "and you, too." Just then our uncles Platt and George also appeared in the distance, and with another basket between them—and it was clear enough, as far as you could see them, that Uncle George was growling. What, what, a quarter of a mile on gouty feet, and all for a little maple sugar! Why not let the world alone. On top of the little mother's basket was a nicely folded table-cloth. Why is it a woman can never eat without a white cloth under her food? So it is; but for me I prefer green, like the sod. While the cloth was spread over a great stump, Uncle George uncovered two dozen eggs. "'Tis all the hens have laid," said my Uncle Platt, "and I shall have none for Easter." "'Tis just enough," said my Uncle George. Then, hopping about on his gouty feet, he tumbled them all into the kettle of boiling syrup. Ah, but you should always boil your eggs in maple syrup! At last the little mother called out:

"Come, father, let go the sugar, and eat!" There on the stump, and on a great log that we boys straddled, were sandwiches and doughnuts and sliced ham, and there were the eggs that my Uncle George skimmed out of the boiling syrup and gave to us as fast as we could eat them. The squirrels were coming closer and closer, and at last one jumped squarely down on the log beside Jim, and took a bit of his bread. "It's fair," said Jim, "and you shall have more." And the squirrel sat up on his hind legs and said, in pretty good English: "Welcome; glad to see you!" So the family was all together, and everybody ate to his heart's desire. When all were satisfied, the little mother loosed her apron-strings, and then looked about in triumph—as much as to say: "What would you do with your tapping and your boiling, if it were not for me? Indeed! But now I have set all things right; go on with your boring holes and carrying sap!" Then she went back to the house.

Every night the syrup was taken in buckets to the house. There it was turned over to the little mother, who cleansed it and then boiled it down until it became sugar. If you would have the sugar a beautiful white, you should cleanse it with a pint of milk, after breaking in a half-dozen eggs. Then you must swing your kettle over the fire and, as the boiling begins, the impurities will rise to the surface, and you may skim them into a pan for the vinegar barrel. All sugar waste must go to the vinegar; that is, there must be no waste at all—this is household economy.

"The scum is rising white, little mother." So it is; and now, little ones, you shall have a saucerful, each one of

Boiling down the sap.

you, and you shall be quiet. Half an hour of expert watchfulness prevents the rich brown mass from boiling over. Every ounce of white scum is saved for making cookies—except, indeed, that which goes for making boys. Now the bubbles fill the great kettle, large and expressive; and they can hardly be restrained from jumping over into the fire. The kettle is swung a little off the centre of the blaze. Every two minutes a spoonful is given to each boy to stir in a saucer.

"Yes, indeed, little mother, it ropes!" Then the little mother lifts it six inches, and, with exacting eye, pours it slowly into a pan of snow. No, it does not grain! No, it does not wax! But it does rope. Little threads of syrup fly off into the air as the substance falls from the spoon.

Another three minutes, and "It waxes, it waxes!" This is the golden period of "sugaring off." The delicious mass, as it falls upon snow and is stirred, forms a waxy substance, which, once tasted, will never be forgotten. Every stage of the process requires that each boy shall test and taste it, especially when it waxes. Three minutes more and a spoonful, when stirred in a saucer, hardens and grains. This is the critical moment! Swing the kettle clear of the fire! Set it firmly on the hearth! And now the boys by turn must stir it with all their might. It will take two hours of vigorous work before the light brunette will become a beautiful blonde. Before that time comes, alas, each little arm will be nearly twisted off with the process. At last the hardening mass is poured into tins and set aside to be thoroughly cooled. The next day the sugar is ready for packing in stone jars, to be kept for family use.

Some of it may be traded at the store for pins and needles, and saleratus and tea.

There was a broad shelf in every genuine pantry of those good old days. It was at one end of a capacious room, and on both sides it was flanked by other shelves. On one side were pans of milk; on the other were canisters of spices, coffee, tea; and there were jars of preserves and pickles. The lower shelves were sacred to pies and goodies; while under the broad shelf stood the great stone jars of maple sugar. Bless my soul! How I should like to eat one more dinner from that broad shelf! Maple sugar and bread in equal proportions—and gooseberry jelly with currant tarts and caraway cookies. Bless the Lord for memory! I can almost compass the dinner at this moment. Under the window outside came the chickens, and said as plainly as could be: "What, take our eggs and not give us a share? What, eating and not call us?" Then we spared them the crumbs—those that we found in the great wooden bread-bowl!

I hold it still that a maple sap-bush is the most genuinely native American spot in the land. In England the maple trees will not make sugar, and the Norway maples give milk. "In fact," said our father, "we have it all. What else do we need? Have we not the fruits and the animals and the salt and the sugar?" "And our birds," said the little mother, "do they not sing sweeter than any others?" "To be sure," said our father, "what a home God has given us! He has furnished it well."

E. P. Powell.

"The smooth, fresh furrow opens deep and wide."

THE PLOUGHMAN

Clear the brown path, to meet his coulter's gleam!
Lo! on he comes, behind his smoking team,
With toil's bright dewdrops on his sunburnt brow,
The lord of earth, the hero of the plough!

First in the field before the reddening sun,
Last in the shadows when the day is done,
Line after line, along the bursting sod,
Marks the broad acres where his feet have trod;

Still, where he treads, the stubborn clods divide,
The smooth, fresh furrow opens deep and wide;
Matted and dense the tangled turf upheaves,
Mellow and dark the ridgy corn-field cleaves;

Up the steep hillside where the laboring train
Slants the long track that scores the level plain;
Through the moist valley, clogged with oozing clay,
The patient convoy breaks its destined way;

At every turn the loosening chains resound,
The swinging ploughshare circles glistening round,
Till the wide field one billowy waste appears,
And wearied hands unbind the panting steers.

These are the hands whose sturdy labor brings
The peasant's food, the golden pomp of kings;
This is the page whose letters shall be seen
Changed by the sun to words of living green;

This is the scholar whose immortal pen
Spells the first lesson hunger taught to men;
These are the lines which heaven-commanded Toil
Shows on his deed—the charter of the soil!

Oliver Wendell Holmes.

PLOUGHING

When I awoke this morning, shortly before daylight, my first thought was: "To-day I must begin ploughing in the field alongside the far woods." But a moment later I heard the patter of rain upon the roof, and then I knew that I might have a half-hour longer to rest, for no ploughing could be done that day.

When I spoke of ploughing yesterday to my cousin from the city, he said something to me about its being tiresome work.

"No more tiresome," I replied, "than selling tea or books, or running a machine, or getting a sermon ready."

And now on this dull, rainy morning, when I had an extra half-hour to do nothing but dream, I began to turn over in my mind my cousin's remarks and to ask myself whether or not they were really true. My cousin, like most city people, knew little about ploughing, and I have no doubt, as he watched the farmer plodding patiently up and down the furrows, it seemed a very easy, but very tiresome thing to him.

"But," I argued with myself, "if it were left to my cousin to plough a single one of my fields, I am not at all sure just how he would succeed. Would he know, in the first place, when the ground was ready, or how long before seed-planting the ploughing should be done? Would he know just which part of the field he should begin on, and whether he should use a right-hand or a left-hand plough? Did he ever notice that in the farmer's fields there are

sometimes different kinds of furrows—the flat furrow, the overlapping furrow, the rounded furrow? Which of these furrows is the best suited to the time of the year, to the crop, and to the soil of this particular field? Should he plough a narrow furrow or a wide one, a shallow furrow or a deep one, and how can he be sure of making his furrows the same width and depth? When and how are the different divisions or ridges (the 'lands') in the field made, and in what part of the field does the dead-furrow lie? Would it make any difference in his plans if I were to give him a piece of new land to break, or a field of thick weeds to turn under, or a hillside field to plough?"

"No," I concluded, "the only sort of work that is really tiresome is the kind that is easy and doesn't have any problems to make you think, and no one who has ever given a serious thought to his farm work can say that of ploughing."

By this time it was raining smartly, and so I lay abed a little longer still, and tried to picture to myself what I should have been doing if the weather had been fair, and what progress I should have made in my ploughing in the field by the far woods.

I do not know why I have a particular liking for that field. Perhaps it is because it is out of sight of the houses and seems a little closer to nature, perhaps because at a certain point in the field I can catch a glimpse of the lake beyond the woods, or perhaps it is just the field itself with its zigzag rail fence and fringe of bushes and with the two beautiful trees, an elm and a maple, that stand at either end of the field and serve both for ornament and shade.

While I am ploughing, my attention must, of course, be given almost wholly to the turning of the furrows. Here is a root, there a stone, and here again a wet place over which I must pass with care. Here among the stubble is the nest of a field-mouse, made of fine dried grass, from which the frightened owner makes a hasty escape. At the farther end of the field there is a woodchuck's hole. The horses must step warily here, for the ground is treacherous, but the freshly turned furrows will help to fill up the holes, and before harrowing time perhaps the owner may take the hint to remove.

Sometimes at the far end of the furrow, next the woods, I rest for a moment; and while I am resting I drink in the sights and sounds of the fresh spring morning. What new birds are back this morning, I wonder? A robin, a bluebird, a song-sparrow, a grackle, a killdeer, a meadow-lark, these I have heard already for a week past—and, yes, there, to be sure, is a flicker and there a brown thrasher! Welcome back, old fellow! The hawthorn with its tangle of wild grape-vine is waiting for you on yonder hillside, and as long as I can I shall protect you, for I love better than most other things your morning song. I can plough a better furrow, I think, because of it, and I shall spare the old elm-tree if for no other reason than that you sing your spring song from its topmost bough.

My cousin—but this will never do, even if it is raining. It never pays to be an hour late for work, even on a farm!

A busy corner of bird-land.

BIRDS OF THE FARM: THE FIELDS

During the early part of April, when you take your walk across the fields you hear a new song, which resembles that of the song-sparrow. But when you stop for a moment to listen, you notice the difference, and you say to yourself: "Ah, the vesper sparrow has returned." The song is not quite so simple and sweet as that of the song-sparrow, but it is the familiar vesper song of the April fields, and a country walk in these early spring evenings would be dull without it. The vesper sparrow is fond of the roadside and the lane or the pathway across the fields, and as it runs along the path ahead of you, you are sure to notice the white tail-feathers, which are its distinguishing mark.

As for the nest of the vesper sparrow, there are few people who at some time or other have not seen it. What

a sudden start it has given you, in your walk across the fields, to hear the rush and whir of wings at your feet, and with what a feeling of delight have you turned aside the protecting leaf or shrub to disclose to view the snug little, grass-lined nest, with its five speckled, brownish eggs, beneath!

But in these early spring days there are still two other voices of the fields which you cannot easily fail to hear and to remember. Very early in the spring the clear, melodious whistle of the meadow-lark comes across the pasture-land. "Spring o' the year, spring o' the year," he seems to say in his clear, plaintive cry; a moment later you catch a glimpse of his rapid, whizzing flight and hear the warning "Zdt, zdt" of his call-note.

You are not likely to discover the meadow-lark's nest very readily, unless you walk close enough to it to frighten the mother bird, for it is carefully concealed under a tussock of dried grass, with an entrance from the side, so that it is protected from rain and wind alike. The meadow-lark is, of course, not really a lark at all, but belongs to the blackbird family. No doubt the mistaken name is due to the fact that, like the larks, he is fond of the meadows and pasture-fields. At all events, a blackbird he is, and by all odds the most respectable of this rather shady family, being of great value to the farmer on account of the number of injurious worms and insects he destroys.

Besides the meadow-lark's "Spring o' the year," in the rougher and more rocky pasture-lands you are sure to hear the shrill, rapid, cry, "Killdeer, killdeer, killdeer," of the killdeer plover, or snipe, as he is often called. There is a certain wildness about the killdeer, both in his shrill cry

and rapid movements, that attracts your attention. His nesting-place, however, is generally very hard to discover, and when, at last, you have by chance discovered it, in the middle of the open pasture or rocky clearing, you are surprised to find that there is hardly any pretense for a nest at all —only a few rough straws in a slight hollow in the ground, covered by the four dark, muddy-colored eggs, which are always arranged with their smaller ends together in the centre.

Meadow-lark.

As soon as the eggs are hatched, the young birds, like young chickens, are able to run; and a nest which contains four killdeer's eggs to-day may be entirely bare and empty to-morrow. It sometimes happens, in your walks afield, that, without being aware of it, you approach either near the nest or close to the hiding-place of one of the newly hatched birds. Then suddenly your attention is attracted by one of the old birds only a few feet away, whose limping gait and drooping wing give him every appearance of being badly wounded. Very naturally you give chase. The wounded bird flutters off, and you follow farther and still farther.

Then, when you are almost sure that you have him, he suddenly recovers, and the wild "Killdeer, killdeer" from the other side of the field seems, like a peal of derisive mockery, to warn you how simply and easily you have been fooled.

King-bird.

Of the birds which are found in the fields in later spring, probably none are better known to the farmers' boys than the king-bird.

The crown, from which the king-bird gets his name, is not very conspicuous, but if you should brush back the feathers of the head, you would find a hidden crown patch of bright ruby feathers, the only touch of color that he has. As for acting like a king or an absolute ruler, the hawks and crows and blue jays, if they were called upon, could give abundant evidence of that. It is not an uncommon thing, in later summer, to see a pair of king-birds in pursuit of an intruding crow, one perched on his back and pecking furiously at the feathers of his neck and head, while the other circles round and round, dashing at his victim's eyes and tormenting him at every turn.

The king-bird generally feeds upon the larger insects,

the dragon-flies, beetles, crickets, grasshoppers, cicadas, etc., and when food is scarce and bees cross his path, he will not refuse them; but the bees form an exceedingly small part of his bill of fare. I remember once, a few summers ago, being very much interested in watching two king-birds acting the part of highwaymen on the roadside, in front of the place where I was staying. A colony of sand-hornets or digger-wasps, several hundred in number, were busy stocking their underground tunnels with green grasshoppers and crickets. The king-birds, in the meantime, sat on the fence near by and darted out from time to time to relieve the hornets of their burdens when they arrived with fresh supplies. I do not know whether they ate the hornets, too; probably not, for that would be like killing the goose that laid the golden eggs.

There is nothing of special interest in the nesting habits of the king-bird, except that he uses sheep's wool to help to line the nest. Sometimes the wool is not so easily found, however, and then there is nothing for it but to take it off the backs of the sheep themselves. But the king-bird is equal to the occasion, and if you should see him perched on the back of a sheep, tugging vigorously at the wool, you will know that he is only providing materials for his nest.

Nest and eggs of killdeer plover.

PLANTING TIME

Sooner or later every person feels the desire to plant something. One of us dreams of a little patch of orchard bounded by cool, grassy banks. Another wants a snug and tidy garden plat bounded by a wall and a lattice, and at one side a tinker's room of tools, rakes and hoes and watering-cans. Others want long, trim rows of strawberries, beets, and onions, with beds of lettuce, hills of squashes, and clumps of hyssop and sage in the corners. Others want tumbling piles of vines shot through with wild asters and the spires of hollyhocks. Still others would roam afield and find their satisfaction in the things that by chance have found a place in which to grow. But, whatever the form of the wish, the substance is the same—it is the natural man longing to express himself. It is the desire to be alone with something that understands you. I have heard the gardener talk to his plants, and not one of them disputed with him.

Have you made a garden all by yourself? Then try it, if you have not. Do not give the work over to any one else. Yourself thrust the spade into the tender earth. Bear your weight on the handle and feel the earth loosen and break. Turn over the load. You smell the soft, moist odor—an odor that takes you back to your younger and freer days or sends you dreaming over the fields. You have uncovered the depths where the earthworm burrows and the pupa has lain since midsummer. Run your fingers through the soil. It is mealy and fine and

clean. It may have been turned a hundred times, yet it is new and virgin. You feel as if you could plant your feet in the soil and grow like a plant. Spade up the whole bed. Note how the loose earth settles into place as you draw your rake back and forth. The moisture steams from its bosom, and the drying surface affords a mulch to hold the water that lies in its depths.

You are wondering what is contained in this earth. Men have spent their lives to answer that inquiry and have died without making the answer complete. One day you will drop a speck of matter into the soil—a speck so small and round that you must depend on the label to tell whether it is a cabbage or turnip or cauliflower or mustard—and behold! a new being comes forth, endowed with life, with roots and stem and leaves and flowers and fruits and seeds, all unfolding in their appointed season. Where is the seat of this mystery that makes one seed unfold into a turnip and another into a cabbage? I often wonder how a cabbage-seed knows that it is a cabbage-seed.

Your chief joy in your garden will not be in the vegetables that you eat, nor in the flowers that you pick, but in the satisfaction of causing things to grow. You will enjoy the companionship of things that are real and clean. You will come to know the common and the little things. Some time, without knowing it, you will let a pigweed grow; and then you will be sorry to pull it up.

L. H. Bailey.

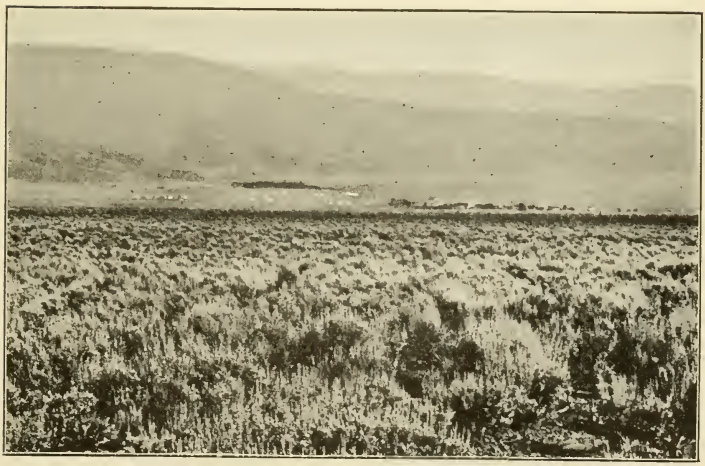
Here is air and God's good greenness spread.

MORNING IN THE NORTHWEST

Gray countries and grim empires pass away
And all the pomp and glory of citied towers
Goes down to dust, and youth itself shall age.
But, oh, the splendor of this autumn dawn,
This passes not away! This dew-drenched range,
This infinite great width of open space,
This cool, keen wind that blows like God's own breath
On life's once drowsy coal, and thrills the blood,
This brooding sea of sun-washed solitude,
This virginal vast dome of open air—
These, these endure, and greater are than grief!
Still there is strength; and life, oh, life is good!
Still the horizon calls, the morrow lures;
Still hearts adventurous seek outward trails;
Still, still life holds its hope!
For here is air and God's good greenness spread!

Here youth audacious fronts the coming day!
Here are no huddled cities old in sin,
Where teem reptilious mirth and golden ease
And age on youth so mountainously lies!
Here life takes on a glory and a strength
Of things still primal, and goes plunging on!
And what care we for time-incrusted tombs?
What care we here for all the ceaseless drip
Of tears in countries old in tragedy?
What care we here for all earth's creeds outworn,
The dreams outlived, the hopes to ashes turned,
In that old East so dark with rain and doubt?
Here life swings glad and free and rude, and youth
Shall drink it to the full, and go content!

ARTHUR STRINGER.



This infinite great width of open space.

CLOVER AND TIMOTHY

On nearly every farm where hay crops are grown for feeding stock you are likely to find a field in which a mixed crop of clover and timothy is growing, and perhaps you may wonder why the farmer should plant these two crops in the same field instead of growing them separately. If you were to ask any intelligent farmer why he does so, he would probably tell you, as one of his reasons, that a mixture of clover and timothy makes better food for his live stock than either clover or timothy alone. People who have made a study of the different kinds of food that animals require, tell us that there are five different things that ought to be included in their food. These five things (which are known as food principles) are: carbohydrates, protein, fat, mineral matter, and water. Carbohydrates supply heat and energy, while protein provides the material for building up the body. Now, it happens that clover contains a large amount of protein, while timothy is composed chiefly of carbohydrates; so that when animals are fed a mixture of clover and timothy, they get a supply of both kinds of food. Young growing animals must have protein to supply them with muscle and tissue; work-horses must have protein to help to keep the body in repair, and cows must have protein in order that they may keep up their supply of milk. It is possible, of course, to supply them with protein from other kinds of food, but the fact that clover supplies it more easily and cheaply than anything else is one reason, at least, why some farmers

prefer to sow a mixed crop of clover and timothy in the same field.

Another reason which a practical farmer might give for growing the two crops together, is that the mixture of clover with timothy helps to make the soil richer, while a crop of timothy alone leaves the soil in a poorer condition than before. But in order to understand this statement we must, in the first place, notice some of the differences between clover and timothy. If you will compare a full-grown clover plant with a stalk of timothy, you will find that they bear their seeds in different ways. The seeds of the clover are contained in little sacs, while those of the timothy grow in a cluster (called a *spike*) at the end of a long stem. Plants such as clover, alfalfa, peas, beans, and vetches, which bear their seeds in sacs or pods, are known as *legumes;* while plants such as timothy, wheat, barley, and oats, which bear their seeds in clusters on the stem, are known as *grasses*. If you look closely at the roots of the clover, or of any other legume, you will notice that they have a number of little sacs (called *tubercules* or *nodules*) attached to them, which you do not find on the roots of timothy. These nodules, as we have already seen, contain *nitrogen*, which is supplied by the bacteria that live on the roots of clover and other legumes. The result is, that wherever clover is grown it leaves the ground richer in nitrogen than before, while, on the other hand, grasses such as timothy take nitrogen from the soil and leave it poorer.

In comparing the two kinds of plants, you will notice, too, that the roots of the clover go much deeper into the soil than those of timothy. This means, of course, that

the clover draws most of its food and moisture from a different part of the soil from the timothy. A mixed crop of clover and timothy is, for this reason, not so hard on the soil as a crop of pure timothy, which draws all its food from the surface of the soil and at the same time exhausts the supply of nitrogen.

A SONG OF CLOVER

I wonder what the clover thinks,
Intimate friend of bobolinks,
Lover of daisies slim and white,
Waltzer with buttercups at night;
Keeper of inn for travelling bees,
Serving to them wine dregs and lees,
Left by the royal humming-birds,
Who sip and pay with fine-spun words;
Comrade of winds, beloved of sun,
Kissed by the dewdrops, one by one;
Sweet by the roadsides, sweet by rills,
Sweet in the meadows, sweet on hills,
Sweet in its white, sweet in its red—
Oh, half its sweetness cannot be said;
Sweet in its every living breath.
Sweetest, perhaps, at last, in death!
Oh, who knows what the clover thinks?
No one, unless the bobolinks!

SAXE HOLM.

"Half its sweetness cannot be said."

PAYING MY WAY

(David Grayson is a well-to-do farmer who has left his farm for a few weeks to journey through the country on foot, to see how other farmers live and what they live for. He has taken food enough with him to last him only a few days and, after going hungry for a day, he is forced at last to try to secure his supper and a night's lodging at one of the farmhouses along the way.)

Presently I saw from the road a farmer and his son planting potatoes in a sloping field. There was no house at all in view. At the bars stood a light wagon half filled with bags of seed-potatoes, and the horse which had drawn it stood quietly, not far off, tied to the fence. The man and the boy, each with a basket on his arm, were at the farther end of the field, dropping potatoes. I stood quietly watching them. They stepped quickly and kept their eyes on the furrows—good workers. I liked the looks of them. I liked, also, the straight, clean furrows; I liked the appearance of the horse.

"I will stop here," I said to myself.

I cannot at all convey the sense of high adventure I had as I stood there. Though I had not the slightest idea of what I should do or say, yet I was determined upon the attack.

Neither father nor son saw me until they had nearly reached the end of the field.

"Step lively, Ben," I heard the man say with some impatience, "we've got to finish this field to-day."

"I *am* steppin' lively, dad," responded the boy, "but

it's awful hot. We can't possibly finish to-day. It's too much."

"We've got to get through here to-day," the man replied grimly; "we're already two weeks late."

I know just how that man felt; for I knew well the difficulty a farmer has in getting help in planting time. The spring waits for no man. My heart went out to the man and boy struggling there in the heat of their sloping field. For this is the real warfare of the common life.

"Why," I said to myself with a curious lift of the heart, "they have need of a fellow just like me."

At that moment the boy saw me, and, missing a step in the rhythm of the planting, the father also looked up and saw me. But neither said a word until the furrows were finished and the planters came to refill their baskets.

"Fine afternoon," I said, sparring for an opening.

"Fine," responded the man rather shortly, glancing up from his work. I recalled the scores of times I had been exactly in his place and had glanced up to see the stranger in the road.

"Got another basket handy?" I asked.

"There is one somewhere around here," he answered not too cordially. The boy said nothing at all, but eyed me with absorbing interest. The gloomy look had already gone from his face.

I slipped my gray bag from my shoulder, took off my coat, and put them both down inside the fence. Then I found the basket and began to fill it from one of the bags. Both man and boy looked up at me questioningly. I enjoyed the situation immensely.

"I heard you say to your son," I said, "that you'd have to hurry in order to get in your potatoes to-day. I can see that for myself. Let me take a hand for a row or two."

The unmistakable shrewd look of the bargainer came suddenly into the man's face, but when I went about my business without hesitation or questioning, he said nothing at all. As for the boy, the change in his countenance was marvellous to see. Something new and astonishing had come into the world. Oh, I know what a thing it is to be a boy and have to work in trouting time!

"How near are you planting, Ben?" I asked.

"About fourteen inches."

So we began in fine spirits. I was delighted with the favorable beginning of my enterprise; there is nothing which so draws men together as their employment at a common task.

Ben was a lad some fifteen years old—very stout and stocky, with a fine open countenance and a frank blue eye—all boy. His nose was as freckled as the back of a trout. The whole situation, including the prospect of help in finishing a tiresome job, pleased him hugely. He stole a glimpse from time to time at me and then at his father. Finally he said:

"Say, you'll have to step lively to keep up with dad."

"I'll show you," I said, "how we used to drop potatoes when I was a boy."

And with that I began to step ahead more quickly and make the pieces fairly fly.

"We old fellows," I said to the father, "must give these young sprouts a lesson once in a while."

"You will, will you?" responded the boy, and instantly began to drop the potatoes at a prodigious speed. The father followed with more dignity, but with evident amusement, and so we all came with a rush to the end of the row.

"I guess that beats the record across *this* field!" remarked the lad, puffing and wiping his forehead. "Say, but you're a good one!"

It gave me a peculiar thrill of pleasure; there is nothing more pleasing than the frank admiration of a boy.

We paused a moment and I said to the man:

"This looks like fine potato land."

"The' isn't any better in these parts," he replied with some pride in his voice.

And so we went at the planting again; and as we planted, we had great talk of seed-potatoes and the advantages and disadvantages of mechanical planters, of cultivating and spraying, and all the lore of prices and profits. Once we stopped at the lower end of the field to get a drink from a jug of water set in the shade of a fence corner, and once we set the horse in the thills and moved the seed farther up the field. And, tired and hungry as I felt, I really enjoyed the work; I really enjoyed talking with this busy father and son, and I wondered what their home life was like and what were their real ambitions and hopes. Thus the sun sank lower and lower, the long shadows began to creep into the valleys, and we came finally toward the end of the field. Suddenly the boy Ben cried out:

"There's Sis!"

I glanced up and saw standing near the gateway a slim, bright girl of about twelve in a fresh gingham dress.

"We're coming!" roared Ben exultantly.

While we were hitching up the horse, the man said to me:

"You'll come down with us and have some supper?"

"Indeed I will," I replied, trying not to make my response too eager.

"Did mother make gingerbread to-day?" I heard the boy whisper audibly.

"Sh-h-" replied the girl, "who is that man?"

"I don't know"—with a great accent of mystery—"and dad doesn't know. Did mother make gingerbread?"

"Sh-h—he'll hear you."

"Gee! but he can plant potatoes. He dropped down on us out of a clear sky."

"What is he?" she asked. "A tramp?"

"Nope, not a tramp. He works. But, Sis, did mother make gingerbread?"

So we all got into the light wagon and drove briskly out along the shady country road. The evening was coming on, and the air was full of the scent of blossoms. We turned finally into a lane and thus came promptly, for the horse was as eager as we, to the capacious farmyard. A motherly woman came out from the house, spoke to her son, and nodded pleasantly to me. There was no especial introduction. I said merely, "My name is Grayson," and I was accepted without a word.

I waited to help the man, whose name I had now learned —it was Stanley—with his horse and wagon, and then we came up to the house. Near the back door there was a pump, with a bench and basin set just within a little cleanly swept, open shed. Rolling back my collar and

baring my arms, I washed myself in the cool water, dashing it over my head until I gasped, and then stepping back, breathless and refreshed, I found the slim girl, Mary, at my elbow with a clean, soft towel. As I stood wiping quietly I could smell the ambrosial odors from the kitchen. In all my life I never enjoyed a moment more than that, I think.

"Come in now," said the motherly Mrs. Stanley.

So we filed into the roomy kitchen, where an older girl, called Kate, was flying about placing steaming dishes upon the table. There was also an older son, who had been at the farm chores. It was altogether a fine, vigorous, independent family. So we all sat down and drew up our chairs. Then we paused a moment, and the father, bowing his head, said in a low voice:

"For all Thy good gifts, Lord, we thank Thee. Preserve us and keep us through another night."

I suppose it was a very ordinary farm meal, but it seems to me I never tasted a better one. The huge piles of new baked bread, the sweet farm butter, already delicious with the flavor of new grass, the bacon and eggs, the potatoes, the rhubarb sauce, the great plates of new, hot gingerbread, and, at the last, the custard pie—a great wedge of it. After the first ravenous appetite of hard-working men was satisfied, there came to be a good deal of lively conversation. The girls had some joke between them which Ben was trying in vain to fathom. The older son told how much milk a certain Alderney cow had given, and Mr. Stanley, quite changed now as he sat at his own table, from the rather grim farmer of the afternoon, revealed a capacity for a husky sort of fun, joking with Ben about

his potato-planting and telling in a lively way of his race with me. As for Mrs. Stanley, she sat smiling behind her tall coffee-pot, radiating good cheer and hospitality. They asked me no questions at all, and I was so hungry and tired that I volunteered no information.

After supper we went out for half or three quarters of an hour to do some final chores, and Mr. Stanley and I stopped in the cattle yard and looked over the cows and talked learnedly about the pigs, and I admired his spring calves to his heart's content, for they really were a fine lot. When we came in again, the lamps had been lighted in the sitting-room, and the older daughter was at the telephone exchanging the news of the day with some neighbor—and with great laughter and enjoyment.

David Grayson.

CONTENTMENT

With a porch at my door, both for shelter and shade, too,
  As the sunshine or rain may prevail;
And a small spot of ground for the use of my spade, too,
  With a barn for the use of my flail;
A cow for my dairy, a dog for my game,
  And a purse when a friend wants to borrow;
I'll envy no nabob his riches or fame,
  Nor what honors await him to-morrow.

May-apples at home.

WELCOME AND UNWELCOME VISITORS

In your walks in the fields and woods in late spring and early summer, you will find it interesting, in your study of flowers, to notice the various means which they have made use of to attract the insects. For most of the flowers, as you know, would not develop into fruit if it were not for the insects which carry pollen dust from flower to flower. The bee is a welcome visitor to most flowers, because he is sure to carry away a supply of pollen dust on his hairy coat. And so the flowers put on their gayest colors and send out their sweetest perfumes in order to attract the bees to the stores of honey which they contain. But the ants are unwelcome, because they do not carry pollen to other flowers. And so the plants have adopted many different devices to keep them from robbing their flowers of the honey which is intended for the bees.

One of the May flowers that has made special provision for attracting the bees is the violet. You will notice in the first place, that the violet has the habit of bending the

head down, in order to keep the spring rains from washing away the nectar and perfume alike. If you were to examine the cup of the violet closely, you would find that its throat is filled with a net-work of little hairs, so as to keep the ants from getting at the store of sweets that are intended only for the bee. And bashful little Miss Violet has adorned herself with a special veining in the form of two delicate purple lines called "honey guides," which, it is supposed, are intended to guide the bee to the point in the flower where the honey-sac is concealed.

Before May is far advanced, in some moist, shaded spot on the hillside, you may perhaps find the white-hearts, or Dutchman's-breeches. Everything about the white-hearts seems to be in keeping, for even the leaf is as delicately cut as a fern, and it would be hard to find anything more dainty than the long row of drooping white and yellow heart-shaped flowers. But there is one thing that you are likely to ask concerning these flowers—where is the honey kept, and how do the bees get at it? Would you believe it? It is kept at the bottom of the legs of the "breeches," where the ants and even the bees find it hard to reach. But even in the world of nature, strange to say, there is sometimes bold burglary and highway robbery, and you may frequently find a whole colony of Dutchman's-breeches where the robbers have been at work. What do they do? Simply cut a hole into the side of the flower and boldly drain the sweets. This, of course, means death to the white-hearts, for now that the nectar is gone no moth or bee will come to carry the precious, life-giving pollen from flower to flower, and, as a consequence, its seeds will not mature.

But even if the ants and bees are sometimes highway robbers, the flowers themselves are not entirely free from blame. Almost every boy and girl is familiar with the Jack-in-the-pulpit, one of the most common of the wild lilies found in the moist, shady May woods. The "pulpit" is one of those quaint, old-fashioned affairs with a canopy overhead, and the preacher is boxed in, in quite a different way from those in our modern churches. A pulpit it is, however, but, alas! Jack is a sad knave of a preacher and a betrayer of his trust. This is the way he works his schemes: Perhaps you may have noticed that some of the "pulpits" are smaller than the others. These are the flowers which contain the pollen; the larger ones contain the seeds, which, of course, will not mature unless sprinkled with the pollen from the smaller flowers. The fly that crawls into the smaller pulpit, attracted by the nectar, finds it impossible to get out again, for the inside of the flower cup is too slippery to climb, and there is no space for him to spread his wings. So he is left for a day or two to crawl helplessly around the floor of the pulpit, until, at last, when he is thoroughly dusted with pollen, the side of his prison suddenly opens out, and he is permitted to escape. And then—foolish fly! Instead of profiting by experience, he is tempted into another Jack-in-the-pulpit near by—one of the larger ones this time, perhaps. His load of pollen dust is just what is required, but the walls of the pulpit are just as slippery as before, and this time Jack, having got his pay, refuses to open the door and let his visitor escape. So for every Jack-in-the-pulpit that blossoms in the woods, one insect at least has died a miserable death.

Every country boy is acquainted with the Indian turnip, with its accompanying cluster of beautiful scarlet berries, which are nothing more or less than the root and fruit of Jack-in-the-pulpit. The boys sometimes call the Indian turnip by another name—memory-root—because the

Blossom of May-apple.

Hedge-bindweed.

boy who has once incautiously tasted of it, and smarted in consequence, is not likely soon to forget his rash experience. The Indians, however, were in the habit of boiling it so as to take away the sharpness, and their fondness of it in this form has given it its common name of Indian turnip.

You know that May is already far advanced when the mandrakes, or May-apples, begin to bloom. The sun is getting warm, too, for this pretty lady with the complexion of pearls refuses to come forth without her parasol, or umbrella, rather, and under this she hides from the

storm and sun alike. A pretty lady, we said—but, alas! that is all that we can say, for the root and leaf alike are deadly poison, and the big, white, pearly flower has a strong, harsh odor which, as usual, is intended to attract the flies. The May-apples themselves, "wild lemons," as they are sometimes called, are not poisonous, and the children sometimes eat them, but it cannot be said that their sweetish flavor is agreeable to the taste. And they are, of course, not "May-apples" at all, for they are not apples and they do not ripen in May.

Purple-flowering raspberry.

Among the tangled growth of the fence corners along the country roads, in early June, we are likely to find the wild morning-glory, or hedge-bindweed, as it is generally called. The interesting thing about the hedge-bindweed is that it is one of the flowers that remain open during the night as well as the day. The big, bell-shaped tube is meant to attract the moths that fly in the night-time, and the flowers are nearly white, too; for what is the use of an array of color, when the moths who are its visitors and carry the pollen from flower to flower cannot see any of the beautiful shades? Most of these night-blooming flowers have a strong fragrance, but the bindweed has none, and trusts altogether to the whiteness of its bell-

shaped tube glimmering in the moonlight to attract its favored friends.

Another June flower, the very opposite in nature to the hedge-bindweed, is the purple-flowering raspberry. Its rich purple color shows that it blooms by day, and that its best friend is the bee; and if you examine it closely you will find that its stem is clammy and sticky, so as to keep off the unwelcome ant. It is a very beautiful flower, but its beauty is not to be meddled with, for the petals are almost sure to drop off if you touch it, and it looks very draggled and wilted before you get far on your way toward home.

The milkweed.

Before June is far advanced, along the roadside or in the rougher parts of the pasture-field you are likely to meet with the first milkweed blossoms of the summer. The milkweed is a general favorite among the insects, and it is interesting to stop for a few minutes to watch what visitors the milkweed flowers have, and how they fare.

The ants, of course, are barred, for not only is the stem covered with fine hairs, which prevent them from climbing, but it is sticky, and the ant can no more climb it then you can walk through a wet clay field after a rain. But the bees are welcome—the only really welcome visitors it has. Watch one of them as it sips the nectar. Ah, there, indeed! One of its feet has slipped into a crack in the side of the flower, and it cannot draw it out without dragging with it the lining of the hole and a big mass of pollen too. Then away it flies to another flower, where the burden of pollen is gratefully received. But see! Here comes a fly. Lucky fellow! He has managed to get a sip of the nectar without falling into the trap. But his neighbor, feeding on the next flower, is not so fortunate—and, tug with all his might, he is not strong enough to draw out the lining of the hole in which his foot has been caught, and so he is left to struggle, and at last to die—and all for the purpose, apparently, of

The pitcher-plant.

simply teaching him a lesson not to trespass on the feeding-ground that is meant for the bee.

In the case of the milkweed, the smaller insects can always get away if they are only strong enough, but with the pitcher-plant that is growing in the marsh at the edge of the pond, a little farther on, the conditions are quite different. The flowers, which blossom in June, are exceedingly beautiful and delicate—and, to give them their due, they are innocent enough. But the leaves, almost as cunningly as a conscious being, have apparently set themselves deliberately to tempt and snare any unfortunate insect that comes in their way. They are folded up somewhat in the shape of a horn, and the inside surface is smeared with honey, to tempt the victim and lure him in. He enters and descends, but in a moment, when he wishes to return, he finds, too late, that retreat is impossible. A bristling forest of hairs, pointing downward, makes it impossible for him to climb the walls of his prison, and the unfortunate victim usually meets his death in the water with which the innocent-looking "pitcher" is always partly filled. It seems, at first sight, strange that such a harmless-looking plant should be such an ogre, but it is in reality the same old story of nature over again. The pitcher-plant must live, by fair means or foul, and, what nourishment it cannot derive from the water and soil, it endeavors to make up for by entrapping and then absorbing and digesting its unsuspecting, and perhaps overgreedy, insect visitors.

THE TOBACCO-PLANT

In the case of some farm plants, such as tomatoes, the farmer's chief care is to produce large, well-formed fruit; and in order to improve the quality of his fruit, he tries to prevent the plant from growing too much to leaf. But some plants, such as lettuce and cabbage, are grown only for the sake of the leaves, which are used for food. Tobacco is another plant which is grown for its leaves; but in the case of the tobacco-plant the question is not, "Of what value is it for food?" but, "How will it burn and what kind of smoke will it produce?"

The tobacco-plant grows to a height of from three to five feet, and its leaves are very large; but in growing tobacco the quality of the leaf must be taken into account as well as its size. If we could make a collection of tobacco leaves grown in different soils we should find that they would differ very greatly in quality. Here, for example, is a fine, silky leaf, grown in light sandy soil, which is used in making wrappers for cigars; here is another variety, grown in a light loam soil, which is used for the inside covers, or "binders," for cigars; a third variety, grown in heavier soil, is used chiefly for fillers; and there are a multitude of other varieties, which are used in the manufacture of different grades of plug tobacco and cigarettes. As a rule, plants that are grown in heavy clay soil have heavy, gummy leaves, which are dark in color when cured; while plants that are grown on light

sandy soil have thin silky leaves, which are yellow or light red in color when cured.

But whatever the variety may be, all tobacco crops are grown in much the same way. Young tobacco-plants are grown from seed in cold-frames or in hotbeds. The seeds of tobacco are very small, and in order to sow them evenly it is necessary to mix them with some other material, such as finely sifted ashes or bone-meal. After the seed is sown, cheese-cloth or light canvas is laid over the glass of the hotbed to keep the sun from burning the young plants. When the seedlings have grown five or six inches high, and have from four to six leaves, they are ready for transplanting. They are usually set out about the first of June, about six or eight weeks after planting, when all danger of late frosts is past.

The soil in the field into which the seedlings are transplanted must be specially prepared. In the first place, in order to secure the best results, the soil must be well fertilized, and must be treated with lime; for the burning qualities of the leaf depend to some extent upon the kinds of plant-food that the soil contains. The ground is then ploughed and harrowed so as to produce a fine surface soil. In some districts the surface of the ground is burned to a depth of two or three inches in order to kill the weed seeds and insects. Sometimes the ground is covered with brushwood, which is set on fire. In other cases the surface soil is heated in a special sort of sheet-iron stove, which is moved across the field; while in still other cases the weed seeds and insects are killed by steam heat, which is applied to the soil.

The seedlings are set out in rows from three to four feet

apart, and a space of from sixteen inches to three feet is left between the plants, according to variety. As long as the size of the plants permits, the ground must be cultivated and hoed, to keep the surface soil loose and to destroy the weeds; but in the later stages of growth the cultivation must be shallow so as not to injure the roots which are near the surface. When the seed heads have begun to develop, and before the plants have come to bloom, they must be "topped." Topping consists in breaking off the crown of the plant, so that its strength will go into the leaves rather than to the formation of seed. After the plant has been topped, new shoots or "suckers" are likely to grow out of the stalk, and these shoots must also be broken off.

The leaves of the growing plant are sometimes attacked by the tobacco flea-beetle, or "flea-bug," a small insect of a reddish-brown color; or by different kinds of tobacco-worms, or caterpillars. One of these tobacco-worms, called the "horn-blower," is a very large, green caterpillar, from two to three inches in length. Both the flea-bug and the tobacco-worms may be destroyed by spraying the plants with arsenate of lead; but they can both be kept down to some extent by destroying the weeds around the edges of the field, which attract the beetles and the moths which produce caterpillars.

When the leaves of the plant have changed to a light-green color, it is time to harvest the crop. The plants are cut off close to the ground; and after they have wilted they are hung on pointed laths—four plants to a lath—and these laths are placed on racks in the barn, where the leaves are to be dried, or "cured." Sometimes instead of

cutting down the whole plant, the leaves are stripped off as they ripen, and are strung on wires or cords to be hung up in the curing-barn.

Tobacco is cured, or dried, in a number of different ways. In some districts it is hung up in curing barns or sheds, in which the air is heated by pipes or flues. Tobacco which is cured in this way is known as flue-cured tobacco. In other districts the leaves are cured by means of open fires, the smoke of which gives a special flavor to the tobacco. Tobacco which is cured in this way is known as fire-cured tobacco. The method of curing, as well as the kind of soil in which it is grown, has much to do with the color of the tobacco.

The tobacco-plant is a native of America, and the larger part of the tobacco crop of the world is grown in the United States. The leading tobacco States are Kentucky, Virginia, North Carolina, Tennessee, Ohio, Pennsylvania, New York, Wisconsin, South Carolina, Connecticut, Maryland, and Missouri.

A little sun, a little rain,
  A soft wind blowing from the west—
And woods and fields are sweet again,
  And warmth within the mountain's breast.

So simple is the earth we tread,
  So quick with love and life her frame,
Ten thousand years have dawned and fled,
  And still her magic is the same.

STOPFORD BROOKE.

SUMMER

THE COUNTRY FAITH

Here in the country's heart,
  Where the grass is green,
Life is the same sweet life
  As it e'er hath been.

Trust in a God still lives,
  And the bell at morn
Floats with a thought of God
  O'er the rising corn.

God comes down in the rain,
  And the crop grows tall—
This is the country faith,
  And the best of all!

NORMAN GALE.

The monarch of the prairies.

THE PRAIRIES

These are the gardens of the Desert, these
The unshorn fields, boundless and beautiful,
For which the speech of England has no name—
The Prairies. I behold them for the first,
And my heart swells, while the dilated sight
Takes in the encircling vastness. Lo! they stretch
In airy undulations, far away,
As if the ocean, in his gentlest swell,
Stood still, with all his rounded billows fixed
And motionless for ever.—Motionless?
No—they are all unchained again. The clouds
Sweep over with their shadows, and, beneath,

The surface rolls and fluctuates to the eye;
Dark hollows seem to glide along and chase
The sunny ridges. Breezes of the South!
Who toss the golden and the flame-like flowers,
And pass the prairie-hawk that, poised on high,
Flaps his broad wings, yet moves not—ye have played
Among the palms of Mexico and vines
Of Texas, and have crisped the limpid brooks
That from the fountains of Sonora glide
Into the calm Pacific—have ye fanned
A nobler or a lovelier scene than this?
Man hath no part in all this glorious work:
The hand that built the firmament hath heaved
And smoothed these verdant swells, and sown their slopes
With herbage, planted them with island groves,
And hedged them round with forests. Fitting floor
For this magnificent temple of the sky—
With flowers whose glory and whose multitude
Rival the constellations! The great heavens
Seem to stoop down upon the scene in love—
A nearer vault, and of a tenderer blue,
Than that which bends above our eastern hills.

. . . . . .

Still this great solitude is quick with life.
Myriads of insects, gaudy as the flowers
They flutter over, gentle quadrupeds,
And birds, that scarce have learned the fear of man,
Are here, and sliding reptiles of the ground,
Startlingly beautiful. The graceful deer
Bounds to the wood at my approach. The bee,
A more adventurous colonist than man,

With whom he came across the eastern deep,
Fills the savannas with his murmurings,
And hides his sweets, as in the golden age,
Within the hollow oak. I listen long
To his domestic hum, and think I hear
The sound of that advancing multitude
Which soon shall fill these deserts. From the ground
Comes up the laugh of children, the soft voice
Of maidens, and the sweet and solemn hymn
Of Sabbath worshippers. The low of herds
Blends with the rustling of the heavy grain
Over the dark-brown furrows. All at once
A fresher wind sweeps by, and breaks my dream,
And I am in the wilderness alone.

WILLIAM CULLEN BRYANT.

"The surface rolls and fluctuates to the eye."

ALFALFA—"THE BEST FODDER"

Alfalfa is the name given to a legume which is grown very extensively in some parts of the country as food for live stock. The name "alfalfa" comes from an Arabic word meaning "the best fodder," and, as we shall see later, there are reasons why it is considered better than other kinds of fodder for horses and cattle. It was introduced into North America many years ago, at first from Europe, and later from South America; but it is only in recent years that farmers have given very much attention to growing it. It was thought at first that it was suited only for the very dry lands of the West; but it is now known that, under proper conditions, it can be grown in nearly all parts of the country.

Let us suppose that, with your father's permission, you wish to make the attempt to grow a crop of alfalfa in one of the fields of his farm, and that you wish to know beforehand what your chances are of making it a success. You may be sure, in the first place, that your crop will be a failure if the field is not properly drained, for alfalfa will not grow upon wet ground, and the drainage should be such as to carry off the surplus water to a depth of at least three feet. Then you must make a test of your soil to see if it is acid, or "sour," for alfalfa will grow only on soils that are sweetened by an abundance of lime. And if your soil is hard and lumpy, your alfalfa will not grow nearly so well as if it were loosened and enriched by a plentiful

supply of barn-yard manure. You cannot expect a good crop of alfalfa unless the soil contains a good deal of humus.

But even though the soil itself is in good condition, something else is needed in order to make your alfalfa grow. Alfalfa, as we have learned, is a legume, and legumes will not grow unless the soil contains the bacteria which supply them with nitrogen; and different legumes require different kinds of bacteria. So it might happen that your alfalfa plants would not grow because the right kind of bacteria were not present in the soil. Before you sow your alfalfa, then, you must take pains to supply your soil with bacteria. The easiest way to do this is to sprinkle your soil with earth from a field in the neighborhood in which alfalfa has already been grown, or with earth from around the roots of the sweet clover, which makes use of the same sort of bacteria as alfalfa. This earth, it is well to remember, should be harrowed into your field before the sun has had a chance to shine on it too long, for strong sunlight will kill the bacteria.

Now that you know upon what kind of soil alfalfa will grow, the next thing about which you must learn is the method of cultivation. The young alfalfa crop is in greater danger from weeds than from any other enemy; and the ground must be prepared in such a way that the weeds will have little chance to grow. Just because of this danger from weeds, alfalfa is generally sown after a cultivated crop such as corn or potatoes, and in some parts of the country it is planted with oats or barley, which helps to choke out the weeds. Alfalfa is usually sown some time between April and August, according to the soil and the locality. Generally from ten to fifteen pounds of seed

per acre is required. For the best results the seed should be planted with a drill, from one to two inches deep. After the young plants appear it is sometimes necessary to clip the field with a mower, in order to keep down the weeds. As soon as the new buds begin to appear at the base of the stalks, it is time to harvest the first crop. This is generally early in June, when the plants are beginning to flower. When the alfalfa is cut, the harvest should be rushed forward so as to clear the field for the second crop, which is already beginning to grow.

It is easy to understand why farmers who have raised alfalfa should put so high a value on it as a farm crop. In the first place, it contains as much protein, pound for pound, as wheat bran, and nearly twice as much as clover; and when fed under proper conditions, it is literally "the best fodder" obtainable for farm stock. Besides this, it produces from three to five crops in a season and, acre for acre, gives more than double the yield of either clover or timothy. And finally, aside from its value as fodder, it enriches the soil. Its long roots run down deep into the earth, so that it is able to draw both food and moisture from lower levels in the soil, which the roots of other plants do not reach. And, like other legumes, it draws nitrogen from the air and stores it away in nodules, so that when a field of alfalfa is ploughed up, the ground is richer in plant-food than before it was sown.

The desert riders of ancient times knew nothing of modern methods of farming, but in one thing at least they anticipated the twentieth-century farmer, when they discovered the value of this wonderful legume and gave to it the appropriate name of *alfalfa*, "the best fodder."

Flowers, fruit, and honey.

A COLONY OF HONEY-BEES

A colony of honey-bees consists of three classes of individuals—the queen bee, the workers, and the drones. The queen bee is the mother of the colony and lays all the eggs from which the workers and drones are hatched. The workers are female bees which lay no eggs, but which gather pollen and honey and do the work of the hive. Every hive contains thousands of worker bees. The drones are the male bees; these bees do no work, and there are only a few hundred drones in the hive. These three kinds of bees are easily distinguished, both by appearance and size; for the workers are smaller than either the queen or the drones.

A properly constructed bee-hive consists of a box con-

taining a number of vertical frames which can be easily removed. These frames are generally so constructed that a small space is left between the frame and the hive, just sufficiently wide for a bee to pass through. This opening is known as a "bee-space."

Within each of the frames the workers build two rows of six-sided wax cells placed end to end, and in these cells the eggs are laid, and the young are reared; here also the honey is stored. The cells are of different sizes, some for rearing workers, larger ones for rearing drones, and still others for storing honey. But bee-keepers are able to control the number of worker cells by providing a foundation sheet of wax indented with the size and shape of the cells desired. The bees follow these indentations in building up their comb.

In spring, when the weather grows warm, the queen begins to lay eggs in the worker cells. Within three days these eggs hatch out into tiny "worms," or larvæ, which grow large enough in a few days more to fill the cells. The cells are then capped over, the larvæ spin cocoons, and in twenty-one days from the time the eggs are laid the young bees hatch out.

When the hive has become filled with workers, the queen lays eggs in the larger cells, and these develop into drones. Now it is plain that the family cannot continue to increase in size unless some other home is provided. But a new colony cannot be formed without providing a new queen for those who are left behind. So the workers begin to make ready for the change by building a number of queen cells, which are of a larger size and different shape from the others. When the eggs which are laid in

these cells hatch out, the workers provide the larvæ with special food. Then, as usual, these queen cells are sealed up, while the larvæ spin their cocoons.

Now, since there is no danger that the old colony will be left without a queen, a large number of the workers are ready to leave the hive—or to "swarm"—and seek a new home elsewhere, and in swarming they always take the old queen with them as mother of the new colony. In earlier times, before the habits of bees were so well known, many colonies were lost in swarming time; but now the watchful bee-keeper is able to save the new colonies by providing hives for them at the proper time.

In the meantime, in the course of a week after the swarming has taken place, the new queens are ready to emerge from their cells. If the colony is still so large that it must swarm again, at least two of the queens are permitted to hatch; but if the colony is not too large, the first queen to emerge is permitted to tear open the cells and kill the other queens.

When the new queen is from five to eight days old, she leaves her cell for what is known as her "nuptial flight," when she mates with a drone. She then returns to the hive, and does not leave it again unless the colony swarms.

Only one queen at a time is, as a rule, tolerated in a hive. If by chance a strange queen gets into a hive where there is already a queen, there will be a battle royal, resulting in the death of one. Mother and daughter may for a time get along quite peaceably, but never mother and daughter-in-law; and their subjects, the workers, apparently have something to say about the matter also. In modern bee culture it sometimes happens that the

queen dies. The bees set up a cry of distress. They are out of sorts with themselves and their owner. The prospects for the future are decidedly bad; the old bees begin to die off; and unless there is a queen to lay eggs and keep the young brood going, the colony itself will soon become extinct. Here the bee-keeper steps in and supplies a queen. He cannot let loose this stepmother into the hive, even though the inmates be "crying" for want of her. He must go through the preliminary process of "introducing" her. This is done by shutting her up in a little cage supplied with soft candy. She is then placed between the combs for twenty-four or forty-eight hours, during which time she acquires the odor of the colony. She is no longer a stranger, and is released among the bees. If she be "accepted" by them, they begin to feed her by extending their tongues, offering her a drop of honey or nectar. Other bees will begin to comb her hair. They will stand around her in a circle three or four bees high, perhaps. At times they extend to her all the royal attention that a human queen might expect from her subjects.

The work of the hive is divided between the young bees, or nurses, that do not go to the field, and the old bees, or "fielders," that gather nectar or pollen. In general the inside work—building of cells, care of the brood, and cleaning of the hive—is done by bees that are less than seventeen days old. To these young bees also falls the task of guarding the entrance of the hive against robbers.

The average life of the worker bee in the height of the season is about six weeks. At the end of that time their wings may become so worn that they are no longer able

to work. Notwithstanding that they have toiled and spent their life-blood, the younger generation of bees coming on will, without the least spark of gratitude, push these old bees out of the hive, pick them up, fly out into the field with them, and drop them. The poor old bees cannot walk back—it is too far; and they cannot fly, and so they die. The merciless process is repeated generation after generation. It is another case of the survival of the fittest. All undesirables and the weak and infirm must be sacrificed for the good of the colony at large. Even the drone bees, after they have served the purpose of their creation, and after the close of the season, are ruthlessly pushed out of the hive by their sisters. They gather neither pollen nor nectar, so why save them? They, too, must be sacrificed, for winter is coming on, and only the essential must be allowed to survive.

The statement has been made that the young bees guard the entrance—against what? Robber bees. Bees, like their owners, learn that they can steal from their neighbors. The ordinary honest bee will, perhaps, spend a whole day in the fields gathering a single load of nectar. This, of course, means hard work. If, however, the bee-man leaves any honey or syrup exposed, or if a certain colony is not very strong, when there is no honey in the fields these honest bees may become thieves. They will overpower a weak colony. They will steal the syrup or the honey, and in a short time there will be a general pow-wow of excitement. Every bee, anxious to store for its own hive, will pounce on these coveted sweets. It takes a robber bee less than a minute to fill up with honey, rush back to the hive, deposit its load, and then rush back with

a lot of its fellows. The excitement grows apace. If the apiarist is not on hand to stop proceedings, the whole apiary will be involved. When the honey is gone, there is trouble. Becoming excited and angry because there is no more, they are liable to wreak their vengeance on cats, dogs, chickens, or on pedestrians and teamsters in the highway. The wise apiarist, if he comes upon the scene in time, will remove the hive, and if a weak colony is being overpowered, will carry it down cellar. He may go even so far as to set a robber-trap. This device allows the bees to go into a hive that is set as a decoy, but permits none to get out. In half an hour he may catch all the robber bees, amounting to some thousands. After their wild excitement, he knows that he must shut them up for a day or two, or until they cool off. Or he may destroy them, for once a bee learns bad tricks it will keep them up.

Fortunately, these robbing episodes are not frequent, but are here mentioned to caution the novice against leaving sweets exposed or allowing colonies in the apiary to become so weak that they will be overcome by their more powerful neighbors.

E. R. Root (adapted).

We thank Thee, Lord, for youth—
Its sunny hours with song and gladness fraught,
For May-tide dawns, for earth renewed with flow'rs—
Dear tokens of Thy tender care and thought!
In very truth,
We bless Thee for the glowing spring of youth.

THE SONG OF THE BEE

Buzz! buzz! buzz!
  This is the song of the bee.
His legs are of yellow;
A jolly, good fellow,
  And yet a great worker is he.

In days that are sunny
He's getting his honey;
In days that are cloudy
  He's making his wax:
On pinks and on lilies,
And gay daffodillies,
And columbine blossoms,
  He levies a tax!

Buzz! buzz! buzz!
From morning's first light
Till the coming of night,
He's singing and toiling
  The summer day through.
Oh! we may get weary,
And think work is dreary;
'Tis harder by far
  To have nothing to do!

MARIAN DOUGLAS.

GETTING IN THE HAY

It is an evening in the early part of July. Supper has been eaten, the cows have been milked, and Farmer Dan'els sits on his front stoop, slowly puffing his stogy and looking out over his fine stretch of level meadows. His oldest boy, a sturdy, brown-skinned youth of sixteen, is standing just within the doorway behind him.

Farmer Dan'els takes the stogy from his lips. "Larry," he says, with a quiet drawl, "you'd better oil up the machines to-night. We'll cut to-morrow."

Thus come the marching orders—the signal words that mark the halcyon days of the country summer, the Arcadian period of the farmer's year. The sordid drudgery of the stable, the dreary monotony of the dairy, the barren burden of the plough—all are dissipated by the sweet romance of getting in the hay. At any rate, so it has always seemed to me. Haying is work, hard work, hot work, but somehow it seems to be the kind of work that God expected man to do. There is a purity, a freshness, a fragrance about it that fairly sweeten the sweat drops on the toiler's brow.

At five the next morning, then, all hands are stirring. At five-thirty the milking is over and the breakfast is under way.

At six the two mowing-machines go jangling down the lane, each drawn by a burly team, one guided by Larry and the other by Farmer Dan'els, who bob up and down in their iron seats as the heavy wheels rumble along the

driveway. Crossing the public road, they turn into the meadow and fall into position, one behind the other, with the space of a dozen yards or so between. The gears are thrown in, the "giddaps" ring out—and the tall timothy begins to fall.

Down the meadow they go, straight as a chalk line; then across the lower edge, up the other side, back to the corner, and down again. The "clink-clink-clink" of the cutting-bar sings as tunefully as a chorus of clarionets; and when they stop and back up, to turn the corners square, you hear the ratchets fall with a click-click, as if the orchestra had paused to tune up for the next passage.

Gradually the meadow takes on the appearance of an immense emerald rug with a pale-green border formed by the fallen grass.

A half hour passes. The sun climbs higher, and the air is heavy with the sweet odor of bruised grass and clover.

Now, rattling into the field, comes young Roland, whose nine years of being have qualified him to drive the rake. It is always the oldest horse and the youngest boy who do the raking.

The teeth of the rake are held clear of the ground, as a lady holds her petticoats, while he drives across the lot to the patch cut yesterday, which in the interim has changed from grass to hay. Swinging into place close to the fence, he releases the lever; the long, arched teeth fall into the hay, and with a chirp to old Frank he is off, the straddling wheels trundling over the stubble and looking for all the world like a great daddy-long-legs. A careless kick with his bare right foot every three rods or so dumps the rake and leaves the hay in windrows that steadily

lengthen as he doubles back and forth across the meadow. How simple it appears—this raking. But if you have ever tried, you know that it takes a practised hand to drive a horse straight in an open field, and a trained eye to keep the line of windrows true. Hats off to you, Roland! I was nearly twice your age when I essayed the task, and a sorry mess I made of it.

The hay-cock is not as common as it used to be. But this morning the hay has dried quickly, and, as there is a pair of hands to spare, Ransom, the second son, aged fourteen, but with a man's breadth of chest, comes on the scene, a pitchfork over his shoulder. Deftly he breaks the windrow into sections and with two heaves of the fork turns each section into a round-topped pile. His arms are bared to the shoulder, and it is good to watch the tawny skin.

So the work goes on, the mowers, with their double equipment, rapidly increasing their lead, until the green rug is all border save a narrow strip down the middle; and this is wiped out just as the sound of a bell announces noon and dinner. A welcome note—that bell—in haying-time! The sun shines hot in the hay-field, hotter than in any place I know of or hope to visit; but it never turns the edge of the toiler's appetite. Even I, lying lazily in the fence corner, have been made ravenous, just from looking on.

Briskly, then, we troop off the field—horses, machines, and men. The machines are dropped in the shadow of the barn, the horses are driven in to their oats and hay, while the men take a drink at the well and a wash in the wood shed. Then we go stamping into the cool dining-

room, with its blue-painted floor, and take our seats at the table.

Farmer Dan'els's wife lifts the cover of a large tureen. "What's this?" I say. "Chickens in haying-time?" A pair of pullets in July is an extravagance unheard of on the kind of farm I've known.

"You can thank Larry for it," says Farmer Dan'els's wife, with a smile of reproval toward her eldest. "He ran 'em down with the milk wagon this morning. And they was jes' ready to lay!"

Larry, you rascal, there is something in your eyes as you set your teeth in a tender wing, that makes me question whether the fricassee is purely an accident, after all.

And *such* a fricassee! And such lettuce, so crisp and green and succulent! And brittle yellow beans with the taste of the garden in them; and a big pitcher of rich, creamy milk; and bread that Farmer Dan'els's wife takes pride in baking every Tuesday and Saturday. And for dessert a blueberry pie. *What* a blueberry pie it is, with the berries an inch deep and the crust so thin that I wonder how it holds itself together. There's many a city magnate, I'll wager, who would pay Farmer Dan'els's wife a fabulous salary just for her blueberry pies, if only they could find her out. But they'll never know through me, I can tell you. It wouldn't be fair to Farmer Dan'els and the boys.

After dinner there is a few minutes' rest on the shady porch, during which Farmer Dan'els smokes a corn-cob pipe and issues the orders for the afternoon.

"Roland," he says to the youngster—and there's a note of tenderness in this—"you better stick around the

house a while till it gets cooler. You did pretty well this mornin'. Ransom, you hook up Jim an' Nell to the mower an' start on the east meadow. Larry, if you'll hitch Joe and the sorrel to the wagon, we'll get in some o' that hay."

Five minutes later, Ransom comes clattering down from the barn and goes off toward the east meadow. Behind him comes Larry with the wagon, a low-wheeled affair with a broad, flat rack, and a pole standing up at either end like the masts of a schooner.

"Wait a moment," I say. Running to the barn, I am back directly with a pitchfork under my arm.

Farmer Dan'els smiles whimsically. "Goin' to give us a hand?" he asks.

I grin, and we clamber aboard; and we ride out to the field, our legs dangling over the side.

Outwardly I am calm and confident; inwardly I am wondering if I will last till the load is on. I refuse to be classed as a novice, for as a boy I had my trial at it. But that was twenty years ago.

We start at the near end of the field, Farmer Dan'els and I at either side, pitching on, and Larry atop the wagon, building the load. It is quite a moment for me. I am strong enough, bigger than Farmer Dan'els, and hard as nails. But have I lost the knack of getting under the fork? For that's the secret of pitching hay.

"Don't lift it like a spoon," they used to tell me; "git under it an' h'ist!"

At the first stop, Farmer Dan'els has all of his aboard while I am picking the top off mine. Larry, observant and tactful, dallies with his fork and fumbles the reins

before driving on to the next windrow. This gives me a new start, and at the second stack I do much better. At the third, I begin to get my stride. Up the field we go and down again, and how I rejoice to see that I am keeping

I rejoice to see that I am keeping squarely up with the wagon.

squarely up with the wagon, sweating much more than Farmer Dan'els, I admit, but working as fast anyhow.

Every forkful makes the lift higher now, but that doesn't trouble me, for I've recalled the trick of it—I am "getting under my fork."

Presently the word goes out: "We'll call that a load!"

And we start for the barn, Ransom, knee-deep in the hay, driving the team, and Farmer Dan'els and I striding along beside the load, dragging our forks behind us. A proud and happy man am I as we walk in, particularly

when Farmer Dan'els puts his honest hand on my shoulder and says:

"Well done, boy; I didn't think it was in you."

We halt in front of the steel-roofed barn. Larry clambers into the mow, and Farmer Dan'els mounts the load. Suspended from the top of the loft door is the hay-fork, looking like an immense U upside down. The rope that holds it passes along the top of the loft to the rear end, through a pulley, and then down, and out at a side door, where stands young Roland with old Frank, ready to hook on and furnish the power; one-horse power, literally, with Roland as the engineer.

Now Farmer Dan'els plunges the fork deep into the hay, snaps the points together, and shouts the word to go. Roland passes the word to old Frank, emphasizing it with a slap of the reins; the horse canters forward and away goes the entire top of the load, squeezing in through the door and flying straight through the loft to the back of the mow.

Larry, steaming in a temperature of 102 degrees, packs it snugly away. The fork returns to the door, while old Frank is being turned around and driven back for another haul. With four or five more lifts we clear the wagon, and then all hands clamber on the rack and rumble down the lane and into the field for another load.

Some time in the middle of the afternoon, the farmer's daughter comes into the field with a tin dipper and a pail of water drawn from a well that goes down twenty-five feet through solid rock. Clear as crystal it is, and so cold one would think it had been iced. What a draught for a toiler in the sun!

The mowing is now so well in advance that the machine is brought in, and Ransom's team is hooked up to another wagon. Then he and I work with one team, while Farmer Dan'els and Larry continue with the other. Before we know it, there is a good-natured contest on between the two outfits. Work as we can, they beat us, but only by a nose—or a forkful, to be more literal—and as Farmer Dan'els drives his rack over the hilltop, another good load follows close behind.

"Four big tons!" declares Farmer Dan'els, as we swing the last lift of the two cargoes into the yawning door. "It's a fine finish of a good day's work."

The forks are stacked in a corner of the barn, the horses are watered and fed, and we file in to a wonderful supper of crisp-fried salt pork, boiled potatoes, and cream gravy, topped off with hot biscuits and clover honey as yellow as new gold.

After supper the milking has to be done, everybody giving a hand except the daughter of the house, who stays within to clear the table and put the kitchen straight; and after the milking the boys and I scurry across the pasture and over the ledge, wriggle out of our clothes, and plunge into the waters of the Saint Lawrence. Was ever a swim so blissful? None but a toiler in hay-time can know the joy of that river's cool caress.

Leaving the younger bloods splashing about like sea-lions, I shake myself dry, dress, and return to the house, to find Farmer Dan'els sitting on the porch, smoking leisurely, his eyes toward the west, where the sun, looking for all the world like a big red balloon, is sinking below the sky line.

Farmer Dan'els points to it with the stem of his corncob. "Another good day to-morrow," he says.

"What if it rains?" I ask. "There's a good bit of hay out there, cut, that we didn't get in."

"It won't rain," he answers with gentle conviction.

"How do you know?" I ask him.

"It never does after a sunset like that—an' I've been watchin' em for thirty year. Besides, there was a warm moon last night. If this kind o' weather holds out, we'll have the job all done in a couple o' weeks."

I sniff the air. Oh, how sweet! The sun, all day distilling the essence of clover and hay and field flowers, has gone down, and the fragrance of fresh and growing things, the fragrance of hay-time, is borne to us on the cool air of the evening.

"It smells good," I say.

"Yes, it does." He draws in a deep breath of it.

In the waning light I see upon Farmer Dan'els's furrowed face a faint smile, a smile of quiet, simple, perfect content.

There is a long, restful silence. Farmer Dan'els speaks softly, as if he would not disturb it. "It's hard work, hayin' is," he says, "but, do you know, I—I kind o' like it!"

The boys come straggling up from the river and go into the house. As they pass us on the veranda, one of them calls back over his shoulder:

"Good night, father; we're going to bed."

The old cherry-wood clock in the sitting-room strikes nine.

"Well, well!" says Farmer Dan'els, rising, "guess I'll be goin', too."

That's how they get in the hay.

CARL WERNER.

HARVEST TIME

Pillowed and hushed on the silent plain,
Wrapped in her mantle of golden grain,
Wearied of pleasuring weeks away,
Summer is lying asleep to-day.

Where winds come sweet from the wild-rose briers,
And the smoke of the far-off prairie fires:
Yellow her hair as the goldenrod,
And brown her cheeks as the prairie sod.

Purple her eyes as the mists that dream
At the edge of some laggard, sun-drowned stream;
But over their depths the lashes sweep,
For summer is lying to-day asleep.

The north wind kisses her rosy mouth,
His rival frowns in the far-off south,
And comes caressing her sunburnt cheek,
And summer wakes for one short week.

Awakes and gathers her wealth of grain,
Then sleeps and dreams for a year again.

E. Pauline Johnson.

THE OLD PASTURE-FIELD

When I was a boy, the most attractive place to me on the old home farm was the pasture-field. It was a rambling old field with a fringe of woods on one side and a good-sized creek flowing across the corner into the woods. This creek, my father used to say, just about doubled the value of his farm; but as a boy I cared little about its usefulness in providing a drinking-place for the sheep and cattle. To me it was a river of enchantment, where minnows sunned themselves on golden sands, where wonderful speckled trout lurked under the twisted roots of over-hanging trees; where "skaters" and water-bugs danced in magic circles in the darker shadows; where the cattle drowsed, knee-deep, in the hot August afternoons; and where we boys used to gather, in the long summer evenings, to make our first trials at swimming in "the old swimming-hole" at the bend of the stream.

"I slip, I slide, I gloom, I glance,
Among my skimming swallows;
I make the netted sunbeams dance
Against my sandy shallows.

I chatter, chatter, as I flow
To join the brimming river,
For men may come and men may go
But I go on for ever."

Fresh pastures.

As a boy, it was always my work to go down to the pasture to bring up the cows. I usually walked, for then I could try the tussocks of grass for meadow-larks' nests, or watch for woodchucks, which generally came out morning and evening to feed; or perhaps even give chase to a venturesome red squirrel stealing along the old rail fence from the barn to the woods. But when the ground was wet, it was better fun to straddle old Black Bess and ride down the lane at half-amble, half-gallop, even if we did have to stop at the bars to clear the way for the cattle to come and go. And oh! the simple loveliness of those glorious spring mornings, when the cool, clear air seemed new-washed by the night dews, and sunlight and air together set my blood tingling and dancing in my veins, so that I was ready to leap and shout for very joy.

"The year's at the spring,
And day's at the morn;
Morning's at seven,
The hillside's dew-pearled;
The lark's on the wing,
The snail's on the thorn;
God's in his heaven,
All's right with the world."

There are no fence corners in the old pasture now, for the farmer of to-day objects to the waste of ground and objects to the weeds; but to the boys on the farm in the old days the corners in the old "snake" fence were storehouses of treasure. It was here that the blackberries grew that were "red when they were green"; and our

hands and lips alike were stained with the elderberries that nodded in tempting purple clusters over the fence. Here the aster and goldenrod mingled in gay profusion; the tangled undergrowth beneath formed a refuge for the timid wood-hare; at one point, where the grass and weeds

Here a hawthorn bush with a tangle of grape-vines.

formed a natural shelter, the woodchuck threw up a mound of fresh sand from his doorway; and in and out among weeds and moss-covered rails in spring and fall were heard the lispings and twitterings of migrating flocks of birds.

In the field itself there was not a shrub or a stone or scarcely even a weed with which I was not familiar, as with an old friend. Here in this clump of grass was a graybird's nest; here a hawthorn bush with a tangle of grape-vines haunted by cat-birds and thrashers; here was a rougher corner of the pasture, where the killdeer flut-

tered and trailed a broken wing to draw me away from its nest; and here on the higher ridge a clump of red sumacs glowed in a gorgeous blaze of color in the autumn sunlight. There are no dandelions in the field now; they have been sprayed and cultivated out of existence; but in the old pasture in early May the ground was a carpet of glorious yellow.

"Dear common flower that growest beside the way,
Fringing the dusty road with harmless gold,
Which children pluck and in their pride uphold,
High-hearted buccaneers, o'erjoyed that they
An Eldorado in the grass have found
Which not the rich earth's ample round
May match in wealth, thou art more dear to me
Than all the prouder summer blooms may be."

The modern farmer does not believe in a fixed pasture-field, and the old field has been ploughed up and seeded a dozen times since then; and other fields are used for pasture while it is having a "rest." But in my boyhood days the field by the creek was one place on the farm that remained unchanged. The old days with the old delights of boyhood can never return; but I can still see the rail fence and the path which led to the creek, and the old elm with the cattle crowded together in its shade; I can still recall the fresh earthy odors of spring and hear the call of the bird and the soft rippling of the waters of the stream, and up the long lane through the gathering twilight can see the procession of cattle moving slowly home.

"With klingle, klangle, klingle,
Far down the dusky dingle,
The cows are coming home;
Now sweet and clear, and faint and low,
The airy tinklings come and go,
Like chimings from some far-off tower,
Or patterings of an April shower
That makes the daisies grow—
Ko-ling, ko-lang, kolinglelingle,
Far down the darkening dingle
The cows come slowly home."

A BIRD'S ELEGY

He was the first to welcome spring;
Adventurous he came
To wake the dreaming buds and sing
The crocus into flame.

He loved the morning and the dew;
He loved the sun and rain;
He fashioned lyrics as he flew,
With love for their refrain.

Poet of vines and blossoms, he;
Belovèd of them all;
The timid leaves upon the tree
Grew bold at his glad call.

He sang the rapture of the hills,
And from the starry height
He brought the melody that fills
The meadows with delight.

And now behold him dead, alas!
Where he made joy so long:
A bit of blue amid the grass—
A tiny, broken song.

FRANK DEMPSTER SHERMAN.

I returned and saw under the sun that the race is not to the swift nor the battle to the strong, neither yet bread to the wise, nor yet riches to men of understanding, nor yet favor to men of skill—but time and chance happeneth to them all. . . . Wherefore I perceive that there is nothing better than that a man should rejoice in his own works . . . to eat and drink and enjoy the good of all his labor that he taketh under the sun, all the days of his life which God giveth him; for it is his portion, . . . this is the gift of God.

The gift of God: that is what I often think a country life really is. And this is the kind of success that farming offers to a man of small means: to work hard, but to be his own master, with such days of leisure and recreation as, in his own judgment, it is wise to take; not to accumulate a fortune, perhaps, but to have always enough for his wants; to live upon the fat of the land, and "to enjoy the good of all his labor all the days of his life," as in no other calling.

All this fulness of life is possible to any man who brings to agriculture a strong and willing mind and body, and sane, wholesome views of living—provided always that he has learned the business and has enough capital to gain some little foothold.

A picture comes to my mind of a country home that I once knew well, and where I was a frequent guest. It belonged to a friend, a man much older than myself, who had possessed large means and had always lived the life

of a man of leisure. He had a large family of children, most of them girls. Among other things that he possessed was a small farm, and in an evil hour—or possibly a good one—practically everything he had was swept away except this farm, and he was obliged to move upon it and get his living as a farmer.

The farm was near my own, and I saw much of the children. They were all of them, girls as well as boys, constantly out-of-doors. They knew all about sledding, skating, ice-boating; they became expert in rowing and swimming; and they rode horseback, although they had nothing but farm horses for the purpose. They had all kinds of pets and were always raising dogs, pigeons, or poultry—and incidentally it may be said that they bred some very fine ones.

Their father had brought from his city home a fine library, and he also subscribed to a goodly number of magazines and periodicals; and his family, though really poorer than most of their neighbors, had plenty of time for reading. The old-fashioned "great south room" of the farmhouse served as parlor, library, and living-room, all in one; and its careless profusion of books, music, and chairs that were comfortable to sit in, would probably have shocked the tidy housewives of the neighborhood, whose "best furniture" was arranged with mathematical precision, and whose parlors were rarely opened except for a funeral or the minister's tea-drinking. In winter there was generally a wood fire in the fireplace, which added to the impression of comfort and cheer.

This man never became an expert farmer, though in some things—fruit-growing and gardening—he excelled;

but what is much more to our purpose, he made a good living and he had considerable leisure. I often sat at his table, and though everything was very simple—for he could not afford a servant—the food was of the best and, as a rule, almost everything was produced on the farm. I recently dined with one of his daughters, now a woman grown and in easy circumstances, and she said as we entered the dining-room: "I can't give you such a dinner as we used to have at the old farm, for we can't get such things in the market at any price; they don't have them."

Let me give you another example. Not far from my early home is a young man who, after graduating from college and working for some years as a salaried man in the city, decided to try his hand on a small and much-neglected farm that was left him by his father. The young man was married and had two children, and it took several years of uncomfortable pinching economy to get together enough money to stock and equip the place. Now, after five years of farming, he expresses himself as more than satisfied with the change. "I don't handle as much money as I did in town," he said to me lately, "but I get fully twice as much, in one way and another, for my labor, and I have more time to myself."

DAVID BUFFUM.

The experience of all mankind declares that a race of men, sound in soul and limb, can be bred and reared only in the exercise of plough and spade in the free air, with country enjoyment and amusements—never amidst foul drains and smoke-blacks and the eternal clank of machinery.

FROUDE.

NATURE AND THE CHILD

For many blessings I to God upraise
  A thankful heart; the life He gives is fair
And sweet and good, since He is everywhere,
  Still with me even in the darkest ways.

But most I thank Him for my earliest days
  With flocks and birds and flowers, free from all care,
And glad as brook that through a meadow strays.
  O balmy air, O orchards white with bloom,

O waving fields of ever-varying green,
  O deep, mysterious woods, whose leafy gloom
Invites to pensive dreams of worlds unseen,
  No power from you my heart can ever wean.

JOHN LANCASTER SPALDING.

A tempting road.

THE ROADSIDE IN JULY

The flowers that grow along the side of the road in midsummer may not be so dainty and delicate as those which we find in the fields and woods, but in many ways they are equally interesting; and if you examine them after the dust has been scoured off by a good thunder-shower, you will find that they are not, after all, without a considerable beauty of their own.

All plants, as we know, have a struggle to live, and most of them have adapted themselves so as to encourage their friends and discourage their enemies. But perhaps the flowers of the roadsides and open fields have a greater struggle than the rest; for with cows and sheep, horses, rabbits, etc., all looking for the best things to eat, they

are in danger of being eaten up before they have a chance to come to flower. And so they have, in most cases, armed themselves in such a way as to make it decidedly unpleasant for any animal that attempts to make a meal of them. The thistle has covered itself with a multitude of needles; the mullein wears a coat of flannel which is dry eating; the burdock is bitter and unpleasant to the taste; and the nettle is armed with a myriad little stings. The result is that they are generally left severely alone, except when the public welfare demands that they be exterminated by means of the scythe or the hoe.

The thistle is wise, too, in other respects. Its blossoms, taken singly, are so small and insignificant that they would not attract the bees, and so they have formed a "combine"; and a single thistle head is in reality made up of hundreds of thistle flowers grouped together in one. Then the thistle throws her house open and makes her invitation to the insects general, except, of course, to the ants. But of all the insects the bee is, as usual, the favorite.

If you stop to consider it, you will find that not many flowers have been honored like this rough, prickly, roadside thistle. In the first place, a great nation, hardy and rough in the exterior, but gentle at heart like the thistle, has taken it for an emblem. Tradition says that, in the time of Alfred the Great, the Danes were once making a midnight attack on a sleeping village in Scotland, when one of the Danish soldiers trod on a thistle, and raised such a cry of pain that the Scotch were warned of the enemy's approach. Thereafter, in gratitude for their deliverance, the Scotch made the thistle their national emblem.

Nettles are quite different from thistles in many ways. In the first place they have very insignificant flowers; for the pollen is carried from flower to flower by the wind, and they have no need, therefore, to put on bright colors to attract the bees. Their "sting," too, is quite different

The nettle. Blue vervain. Butter and eggs.

from that of the thistle. They are covered with little prickles, at the root of each of which is a small sac filled with formic acid, the same kind of poison that the bees and the ants use in their sting. When the fine needle-point of a nettle breaks off in your finger, the formic acid presses into the wound and irritates it. Soda or ammonia, however, will counteract its effect, to some extent at least.

Nearly every one knows the chicory when he sees it, and certainly every one has heard of it, for the roots are sometimes ground up and mixed with coffee, to adulterate

it; and a good many people use the leaves in making salad. But on a hot, midsummer day the flowers are more attractive than the leaves and root. What feelings of surprise and pleasure it gives you to find its delicate blue flower cups by the dusty roadside or in the waste places along the side of the village street.

"Oh, not in ladies' gardens,
My peasant posy!
Smile thy dear blue eyes,
Nor only—nearer to the skies—
In upland pastures, dim and sweet,
But by the dusty road
Where tired feet
Toil to and fro,
Where flaunting Sin
May see thy heavenly hue,
Or weary Sorrow look from thee
Toward a more tender blue."

Two other blue flowers that are found abundantly along the roadsides in midsummer are the blue vervain, and the self-heal. Both of these were used in olden times for medicines. The blue vervain, or verbena, was called the "simpler's joy," because the simpler, or herb doctor, made use of it so frequently; and the self-heal, as its name indicates, was used in healing wounds. The vervain grows tall, sometimes even to the height of six feet, and is known by its steeple-shaped flower head. The self-heal, on the other hand, grows close to the ground, seldom more than a few inches in height. It belongs to the mint family and

may be known by the square stem and two-lipped flower, which are characteristic of all the mints.

Butter-and-eggs, or yellow toadflax, is a flower that is too well known to all boys and girls to need any description. Indeed, so common is it that we are apt to overlook

Mullein. Thistles.

the beauty of its pretty yellow and orange flowers and to consider it something of a dangerous pest. But, after all, it generally grows on waste ground that is fit for little else and confines itself to small colonies, instead of spreading singly over the roadsides and fields.

But we must not leave the butter-and-eggs without noticing the ingenious contrivance which it makes use of for excluding all the smaller insects from its flowers. Examine it, and you will see that the two orange-colored lips of the flower are tightly closed, so that ants and other small insects cannot force an entrance. But when the

honey-bee lights on the flower, her weight pulls the lower lip down and reveals the stamens and pistils within, with the honey-sac at the bottom of the spur beyond.

CONSIDER THE LILIES

Flowers preach to us if we will hear:—
The rose saith in the dewy morn:
I am most fair;
Yet all my loveliness is born
Upon a thorn.
The poppy saith amid the corn:
Let but my scarlet head appear
And I am held in scorn;
Yet juice of subtle virtue lies
Within my cup of curious dyes.
The lilies say: Behold how we
Preach without words of purity.
The violets whisper from the shade
Which their own leaves have made:
Men scent our fragrance on the air,
Yet take no heed
Of humble lessons we could read.

But not alone the fairest flowers:
The merest grass
Along the roadside where we pass,
Lichen and moss and sturdy weed,
Tell of His love who sends the dew,
The rain and sunshine too,
To nourish one small seed.

CHRISTINA ROSSETTI.

Ploughing the "back fifty."

THE OFFICE OR THE FARM

Dear Frank:

Your letter, asking me to look out for a position for you here in the city, has caused me a great deal of thinking. I am sorry that you wish to leave the farm to enter business life. Here are some of my reasons:

In the first place, you have a particular sort of knowledge that is of more use to you on the farm than it can be anywhere else. You have learned to plough a straight furrow, to use an axe and a saw, to milk a cow, and to do a score of other things requiring skill. City men who take to farming often fail for lack of just such skill. They have to begin as apprentices at work which you, at sixteen, have learned to do with ease. This farm training is your capital. If you enter an office you make no use of it; the best place to invest it is on the farm.

You think you are wasting your business ability in farming. Surely you are not serious when you say that! If a man is to be a successful farmer he *must* be a business man! He must know the cost of what he produces, must try to increase the amount, and to market his goods to the best possible advantage. And don't you see that because his "goods" are living, growing animals and plants, requiring attention of the right sort, at the right time, in the right way, he must be able to think just as clearly and keenly and to act as promptly as a man in any other line of business? The merchant "takes stock" at the end of the year and finds out whether it pays to deal in certain lines of goods, whether the people he employs are worth what they cost him, whether he may take the risk of enlarging his business. That is exactly what the good farmer does. He "takes stock" and finds out whether it pays him to grow certain crops, whether he is employing either animals or men who are not worth their cost, whether he may risk adding to his machinery or buying more land. Your business ability going to waste on the farm! Why, boy, it is just the place for you to prove whether or not you have any!

Then, too, every other power of your mind can be active on the farm. There is no interest in the handling of sugar and tea, or in the buying and selling of stocks and bonds, that can equal the interest to be found in farming—if you know how to look for it. There is the soil to be studied. Do you know how to find out what fertilizer it requires? Can you decide from the lay of your land what drainage it needs? Do you know if the rotation of crops used on your father's farm is the best possible? There is a whole

world of interest in the trees and shrubs, the weeds, the insects, and the birds—in their relation to your work. Farm animals in themselves offer a subject for interesting study, and farm machinery gives you a chance to use any mechanical gift you may have.

You say you have a better chance to become rich in the city than you have on the farm. Have you ever stopped to think that for every man who makes a huge fortune in the city, there are hundreds who struggle along with barely a living? If on the farm there is not so much chance of becoming a millionaire as in the city, neither is there so much danger of poverty. When you are comparing the farmer's income with city salaries, are you taking everything into account? Do not forget that for his labor the farmer uses his house free of rent and uses farm produce which has a cash value. Then remember that the farmer is improving his own property all the time. Look into the question more fully, Frank, and you will not be so sure that the city man has all the advantage over the farmer in respect to money reward for his labor.

But, even if it were true that country life does not "pay" as highly in dollars and cents as city life, there is another side to the question. What about the man's own life? In which of the two, city or country, does he have the better chance to develop his body and soul into the best sort of manhood? Let my forty years of city life speak on that point. Strongly I say it, Frank—stay in the country! Listen to what I hear this afternoon as I sit in my office. The shriek of trolley-cars, the rumble of heavy trucks over the paved streets, the din of motor-horns, the shrill cry of newsboys, the rival strains from several hand-

organs, are all mingled into a discordant roar that weakens the strongest nerves. I walk to my window and throw it up higher. All I can see is row upon row of windows in the huge office building opposite. With great straining of

Field after field slopes before him to the river valley below.

neck I may catch a glimpse of what I know must be sky, through the layers of smoke above my head. But the dust chokes me, and my telephone rings insistently. So I return to my desk. I close my eyes and see your father. He is in what we boys used to call the "back fifty." He draws in deep breaths of the clean, sweet air as furrow after furrow falls away from his plough. At a turn where

he stops to rest the horses, he listens to a song-sparrow on the fence. He hears the soft roll of the mail-cart's wheels and looks up. What a sight for a tired man's eyes! Field after field slopes before him to the river valley below. That strip of woods to the left—the maple bordered side road—the wide stretch of clear, open sky over all! "Get up, Jess!" There he goes, back to his work, off down the field with new vigor. Oh! Frank, can't I make you see the difference? This morning I completed a big "deal." It may result in a larger bank account for me, or it may bring me only vexation, with days and nights full of anxiety. This morning your father prepared part of the "back fifty" for seeding. He will watch the seed spring up to a harvest that will gladden him and be of real value in supplying the needs of men. The world cannot do without his work; it would be better off without mine!

The city has grown hateful to me because I know it as you do not. We pay too high a price for what it gives us. Some of us cannot escape from it; we must stay and face its problems. But you are free to choose. Don't be foolish, Frank! Stay where your body can grow in clean, healthful surroundings, where you can work at what is in itself worth doing, where your mind and body can escape the cramping mine has struggled against all these years. Stay where you can combine honest hand labor with thought—and live your own life.

One word more. If you should make up your mind to become a farmer—*prepare*. Read, think, and study hard. The boy who sets out to be a farmer ought to prepare himself just as definitely for his work as the boy who wishes

to be a doctor or a minister. After your high school course, go to an agricultural college and try to become the very best farmer possible.

This is the longest letter I have written in many years—yet I could say much more on this subject. But I shall leave it with you.

Think it all over again, and write very soon to,

Your affectionate

UNCLE BOB.
M. B. STEVENSON.

GOOD NIGHT

Good night! Good night!
Far flies the light.
But still God's love
Shall flame above,
Making all bright.
Good night! Good night!

VICTOR HUGO.

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